Transportation

PAT McCRORY
Governor

NICHOLAS J. TENNYSON
Secretary

June 24, 2016

U. S. Army Corps of Engineers
Regulatory Field Office
151 Patton Avenue, Room 208
Asheville, NC 28801-5006

ATTN: Ms. Lori Beckwith
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permit 13** for the proposed replacement of Bridge No. 51 over Floyds Creek on SR 2213 in Rutherford County, Federal Aid Project No. BRZ-2213(2), Division 13, TIP No. B-5397, WBS 46112.1.1.

Dear Madam:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 51 over Floyds Creek with a 100' long, single-span box beam bridge on the existing alignment. Traffic will be maintained during construction via an off-site detour.

As a result of outlet protection for a new lateral base ditch, there will be 22 linear feet of stream bank stabilization impacts. There will be no other impacts from bridge removal or construction.

Please see enclosed copies of the Pre-Construction Notification (PCN), Preliminary Jurisdictional Determination (PJD), stormwater management plan, permit drawings and design plans for the above-referenced project. The Programmatic Categorical Exclusion (PCE) was completed on August 19, 2015 and distributed shortly thereafter. Additional copies are available upon request.

This project is located in a trout county, therefore comments from the NCWRC will be required prior to authorization by the Corps of Engineers. By copy of this letter and attachment, NCDOT hereby requests NCWRC Review. NCDOT requests that NCWRC forward their comments to the Corps of Engineers and the NCDOT within 30 calendar days of receipt of this application.

This project calls for a letting date of February 21, 2017 and a review date of January 3, 2017; however, the let date may advance as additional funding becomes available.

A copy of this permit application and its distribution list will be posted on the NCDOT Website at: http://connect.ncdot.gov/resources/Environmental. If you have any questions or need additional information, please call Erin Cheely at (919) 707-6108.

Sincerely,

for Philip S. Harris III, P.E., C.P.M.
Natural Environment Section Head

cc:
NCDOT Permit Application Standard Distribution List

Office Use Only:
Corps action ID no. _____
DWQ project no. _____
Form Version 1.3 Dec 10 2008

Pre-Construction Notification (PCN) Form

A. Applicant Information

1. Processing

1a. Type(s) of approval sought from the Corps:	☒ Section 404 Permit ☐ Section 10 Permit	
1b. Specify Nationwide Permit (NWP) number: 13	or General Permit (GP) number:	
1c. Has the NWP or GP number been verified by the Corps?	☐ Yes	☒ No
1d. Type(s) of approval sought from the DWQ (check all that apply): ☒ 401 Water Quality Certification – Regular ☐ Non-404 Jurisdictional General Permit ☐ 401 Water Quality Certification – Express ☐ Riparian Buffer Authorization		
1e. Is this notification solely for the record because written approval is not required?	For the record only for DWQ 401 Certification: ☒ Yes ☐ No	For the record only for Corps Permit: ☐ Yes ☒ No
1f. Is payment into a mitigation bank or in-lieu fee program proposed for mitigation of impacts? If so, attach the acceptance letter from mitigation bank or in-lieu fee program.	☐ Yes	☒ No
1g. Is the project located in any of NC's twenty coastal counties. If yes, answer 1h below.	☐ Yes	☒ No
1h. Is the project located within a NC DCM Area of Environmental Concern (AEC)?	☐ Yes	☒ No

2. Project Information

2a. Name of project:	Replacement of Bridge 51 over Floyds Creek on SR 2213
2b. County:	Rutherford
2c. Nearest municipality / town:	Alexander Mills
2d. Subdivision name:	*not applicable*
2e. NCDOT only, T.I.P. or state project no:	B-5397

3. Owner Information

3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation
3b. Deed Book and Page No.	*not applicable*
3c. Responsible Party (for LLC if applicable):	*not applicable*
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699-1598
3f. Telephone no.:	(919) 707-6108
3g. Fax no.:	(919) 212-5785
3h. Email address:	ekcheely@ncdot.gov

4. Applicant Information (if different from owner)	
4a. Applicant is:	☐ Agent ☐ Other, specify:
4b. Name:	*not applicable*
4c. Business name (if applicable):	
4d. Street address:	
4e. City, state, zip:	
4f. Telephone no.:	
4g. Fax no.:	
4h. Email address:	
5. Agent/Consultant Information (if applicable)	
5a. Name:	*not applicable*
5b. Business name (if applicable):	
5c. Street address:	
5d. City, state, zip:	
5e. Telephone no.:	
5f. Fax no.:	
5g. Email address:	

B. Project Information and Prior Project History		
1. Property Identification		
1a. Property identification no. (tax PIN or parcel ID):	*not applicable*	
1b. Site coordinates (in decimal degrees):	Latitude: 35.305986 (DD.DDDDDD)	Longitude: - 81.890681 (-DD.DDDDDD)
1c. Property size:	3 acres	
2. Surface Waters		
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Floyds Creek	
2b. Water Quality Classification of nearest receiving water:	C	
2c. River basin:	Broad	
3. Project Description		
3a. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time of this application: The land use within the vicinity of the project consists of about 40% forest land, 25% developed or disturbed lands (roadsides and residential areas), and 35% cultivated land (agricultural fields and pastures).		
3b. List the total estimated acreage of all existing wetlands on the property: 0		
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 250		
3d. Explain the purpose of the proposed project: The purpose of this project is to replace a structurally deficient (sufficiency rating 7 out of 100, substructure condition 4 out of 9) and functionally obsolete bridge (structural evaluation 3 of 9, deck geometry rating 2 of 9).		
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing a 76-foot three-span bridge with a 100-foot single-span box beam bridge on the existing alignment. All traffic will be detoured off-site during construction. Standard road building equipment, such as trucks, dozers, and cranes will be used.		
4. Jurisdictional Determinations		
4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments: Action ID: 2012-00979	☒ Yes	☐ No ☐ Unknown
4b. If the Corps made the jurisdictional determination, what type of determination was made?	☒ Preliminary	☐ Final
4c. If yes, who delineated the jurisdictional areas? Name (if known): Bill Barrett, Erin Cheely	Agency/Consultant Company: NCDOT Other:	
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. PJD issued 7/6/12. See attachments.		
5. Project History		
5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past?	☐ Yes	☒ No ☐ Unknown
5b. If yes, explain in detail according to “help file” instructions.		
6. Future Project Plans		
6a. Is this a phased project?	☐ Yes	☒ No
6b. If yes, explain.		

C. Proposed Impacts Inventory

1. Impacts Summary

1a. Which sections were completed below for your project (check all that apply):

☐ Wetlands ☒ Streams - tributaries ☐ Buffers

☐ Open Waters ☐ Pond Construction

2. Wetland Impacts

If there are wetland impacts proposed on the site, then complete this question for each wetland area impacted.

2a. Wetland impact number – Permanent (P) or Temporary (T)	2b. Type of impact	2c. Type of wetland (if known)	2d. Forested	2e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	2f. Area of impact (acres)
Site ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
				2g. **Total wetland impacts**	0 Permanent 0 Temporary

2h. Comments: No wetlands within construction limits.

3. Stream Impacts

If there are perennial or intermittent stream impacts (including temporary impacts) proposed on the site, then complete this question for all stream sites impacted.

3a. Stream impact number - Permanent (P) or Temporary (T)	3b. Type of impact	3c. Stream name	3d. Perennial (PER) or intermittent (INT)?	3e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	3f. Average stream width (feet)	3g. Impact length (linear feet)
Site 1 ☒ P ☐ T	Bank Stabilization	Floyds Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	20	22
Site ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
					3h. **Total stream and tributary impacts**	22 Perm 0 Temp

3i. Comments:

4. Open Water Impacts

If there are proposed impacts to lakes, ponds, estuaries, tributaries, sounds, the Atlantic Ocean, or any other open water of the U.S. then individually list all open water impacts below.

4a. Open water impact number – Permanent (P) or Temporary (T)	4b. Name of waterbody (if applicable)	4c. Type of impact	4d. Waterbody type	4e. Area of impact (acres)
O1 ☐ P ☐ T				
O2 ☐ P ☐ T				
O3 ☐ P ☐ T				
O4 ☐ P ☐ T				
4f. Total open water impacts				0 Permanent 0 Temporary

4g. Comments: No open water within construction limits.

5. Pond or Lake Construction

If pond or lake construction proposed, then complete the chart below.

5a. Pond ID number	5b. Proposed use or purpose of pond	5c. Wetland Impacts (acres)			5d. Stream Impacts (feet)			5e. Upland (acres)
		Flooded	Filled	Excavated	Flooded	Filled	Excavated	Flooded
P1								
P2								
5f. Total								

5g. Comments:

5h. Is a dam high hazard permit required?	☐ Yes ☐ No If yes, permit ID no:
5i. Expected pond surface area (acres):	
5j. Size of pond watershed (acres):	
5k. Method of construction:	

6. Buffer Impacts (for DWQ)

If project will impact a protected riparian buffer, then complete the chart below. If yes, then individually list all buffer impacts below. If any impacts require mitigation, then you **MUST** fill out Section D of this form.

6a. Project is in which protected basin?			☐ Neuse ☐ Catawba	☐ Tar-Pamlico ☐ Randleman	☐ Other:
6b. Buffer impact number – Permanent (P) or Temporary (T)	6c. Reason for impact	6d. Stream name	6e. Buffer mitigation required?	6f. Zone 1 impact (square feet)	6g. Zone 2 impact (square feet)
B1 ☐ P ☐ T			☐ Yes ☐ No		
B2 ☐ P ☐ T			☐ Yes ☐ No		
B3 ☐ P ☐ T			☐ Yes ☐ No		
		6h. **Total buffer impacts**			
6i. Comments: This project is not located within a protected buffer area.					

D. Impact Justification and Mitigation

1. Avoidance and Minimization

1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing project.

The proposed replacement bridge will be on the same alignment as the existing bridge. It will be a single-span instead of three-spans. Deck drains are required for the new bridge, however no drains will discharge over open water. Deck drain dissipator pads 4' wide with Class B rip rap will be used to prevent erosion. Existing drainage patterns have been maintained. A rip rap lined ditch is proposed along the left side of the roadway that will convey runoff from an existing ditch to the stream. The streambank will be lined with rip rap where the ditch intersects Floyds Creek. Runoff from the bridge will be collected by an inlet and piped down the fill slope to a rip rap dissipator pad.

1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques.

Traffic will be maintained via an off-site detour during construction. Best Management Practices (BMPs) will be utilized during construction to attempt to reduce the stormwater impacts to the receiving streams due to erosion and runoff.

2. Compensatory Mitigation for Impacts to Waters of the U.S. or Waters of the State

2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?	☐ Yes ☒ No If no, explain:
2b. If yes, mitigation is required by (check all that apply):	☐ DWQ ☐ Corps
2c. If yes, which mitigation option will be used for this project?	☐ Mitigation bank ☐ Payment to in-lieu fee program ☐ Permittee Responsible Mitigation

3. Complete if Using a Mitigation Bank

3a. Name of Mitigation Bank: not applicable

3b. Credits Purchased (attach receipt and letter)	Type	Quantity

3c. Comments:

4. Complete if Making a Payment to In-lieu Fee Program

4a. Approval letter from in-lieu fee program is attached.	☐ Yes
4b. Stream mitigation requested:	0 linear feet
4c. If using stream mitigation, stream temperature:	☐ warm ☐ cool ☐ cold
4d. Buffer mitigation requested (DWQ only):	0 square feet
4e. Riparian wetland mitigation requested:	0 acres
4f. Non-riparian wetland mitigation requested:	0 acres
4g. Coastal (tidal) wetland mitigation requested:	0 acres

4h. Comments: The NCDOT does not propose mitigation for the 22 linear feet of stream bank stabilization. These impacts do not require permanent fill in the stream bed and, therefore, under Section 404 of the Clean Water Act, do not constitute Loss of Waters of the U.S. and are not subject to compensatory mitigation.

Complete if Using a Permittee Responsible Mitigation Plan

5a. If using a permittee responsible mitigation plan, provide a description of the proposed mitigation plan.

6. Buffer Mitigation (State Regulated Riparian Buffer Rules) – required by DWQ				
6a. Will the project result in an impact within a protected riparian buffer that requires buffer mitigation?			☐ Yes	☒ No
6b. If yes, then identify the square feet of impact to each zone of the riparian buffer that requires mitigation. Calculate the amount of mitigation required.				
Zone	6c. Reason for impact	6d. Total impact (square feet)	Multiplier	6e. Required mitigation (square feet)
Zone 1			3 (2 for Catawba)	
Zone 2			1.5	
	6f. **Total buffer mitigation required:**			
6g. If buffer mitigation is required, discuss what type of mitigation is proposed (e.g., payment to private mitigation bank, permittee responsible riparian buffer restoration, payment into an approved in-lieu fee fund).				
6h. Comments:				

E. Stormwater Management and Diffuse Flow Plan (required by DWQ)	
1. Diffuse Flow Plan	
1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?	☐ Yes ☒ No
1b. If yes, then is a diffuse flow plan included? If not, explain why. Comments: If required from 1a, see attached buffer permit drawings.	☐ Yes ☐ No
2. Stormwater Management Plan	
2a. What is the overall percent imperviousness of this project?	N/A
2b. Does this project require a Stormwater Management Plan?	☒ Yes ☐ No
2c. If this project DOES NOT require a Stormwater Management Plan, explain why:	
2d. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan: See attached permit drawings.	
2e. Who will be responsible for the review of the Stormwater Management Plan?	☐ Certified Local Government ☐ DWQ Stormwater Program ☒ DWQ 401 Unit
3. Certified Local Government Stormwater Review	
3a. In which local government's jurisdiction is this project?	not applicable
3b. Which of the following locally-implemented stormwater management programs apply (check all that apply):	☐ Phase II ☐ NSW ☐ USMP ☐ Water Supply Watershed ☐ Other:
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No
4. DWQ Stormwater Program Review	
4a. Which of the following state-implemented stormwater management programs apply (check all that apply):	☐ Coastal counties ☐ HQW ☐ ORW ☐ Session Law 2006-246 ☐ Other:
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No N/A
5. DWQ 401 Unit Stormwater Review	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	☐ Yes ☐ No N/A
5b. Have all of the 401 Unit submittal requirements been met?	☐ Yes ☐ No N/A

F. Supplementary Information		
1. Environmental Documentation (DWQ Requirement)		
1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land?	☒ Yes	☐ No
1b. If you answered "yes" to the above, does the project require preparation of an environmental document pursuant to the requirements of the National or State (North Carolina) Environmental Policy Act (NEPA/SEPA)?	☒ Yes	☐ No
1c. If you answered "yes" to the above, has the document review been finalized by the State Clearing House? (If so, attach a copy of the NEPA or SEPA final approval letter.) Comments: Programmatic Categorical Exclusion (PCE) approved 8/19/15	☒ Yes	☐ No
2. Violations (DWQ Requirement)		
2a. Is the site in violation of DWQ Wetland Rules (15A NCAC 2H .0500), Isolated Wetland Rules (15A NCAC 2H .1300), DWQ Surface Water or Wetland Standards, or Riparian Buffer Rules (15A NCAC 2B .0200)?	☐ Yes	☒ No
2b. Is this an after-the-fact permit application?	☐ Yes	☒ No
2c. If you answered "yes" to one or both of the above questions, provide an explanation of the violation(s):		
3. Cumulative Impacts (DWQ Requirement)		
3a. Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality?	☐ Yes ☒ No	
3b. If you answered "yes" to the above, submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent DWQ policy. If you answered "no," provide a short narrative description. Due to the minimal transportation impact resulting from this bridge replacement, this project will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect or cumulative effects study will not be necessary.		
4. Sewage Disposal (DWQ Requirement)		
4a. Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility. not applicable		

5. Endangered Species and Designated Critical Habitat (Corps Requirement)		
5a. Will this project occur in or near an area with federally protected species or habitat?	☒ Yes	☐ No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	☒ Yes	☐ No
5c. If yes, indicate the USFWS Field Office you have contacted.	☐ Raleigh	☒ Asheville

5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat?

As of July 14, 2015 the USFWS lists seven federally listed species for Rutherford County. There is no habitat present for four of these species. Habitat is present for small whorled pogonia, dwarf-flowered heartleaf and the northern long-eared bat. Surveys were conducted for these two plant species in 2012, and only dwarf-flowered heartleaf was identified within the project area. However, the population of dwarf-flowered heartleaf is located south of the construction footprint of this project. Per e-mail correspondence with Andrew Henderson of the USFWS on January 11, 2016, this project will have No Effect on dwarf-flowered heartleaf.

The remaining species, the northern long-eared bat, is still unresolved. Screenings have been conducted for this species, and a memo indicating that 4(d) requirements have been satisfied will be submitted to the USFWS as soon as it is received from the Biological Surveys Group. It is anticipated that the biological conclusion for this species will be "May Affect" and that 4(d) requirements are satisfied for this project. Section 7 will officially be resolved 30 days after the 4(d) memo is submitted to USFWS.

6. Essential Fish Habitat (Corps Requirement)		
6a. Will this project occur in or near an area designated as essential fish habitat?	☐ Yes	☒ No

6b. What data sources did you use to determine whether your site would impact Essential Fish Habitat?

NMFS County Index

7. Historic or Prehistoric Cultural Resources (Corps Requirement)		
7a. Will this project occur in or near an area that the state, federal or tribal governments have designated as having historic or cultural preservation status (e.g., National Historic Trust designation or properties significant in North Carolina history and archaeology)?	☐ Yes	☒ No

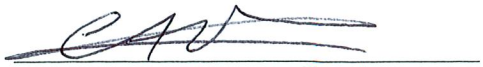
7b. What data sources did you use to determine whether your site would impact historic or archeological resources?

NEPA Documentation

8. Flood Zone Designation (Corps Requirement)		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	☒ Yes	☐ No

8b. If yes, explain how project meets FEMA requirements: NCDOT Hydraulics Unit coordination with FEMA

8c. What source(s) did you use to make the floodplain determination? FEMA Maps

for Philip S. Harris, III, P.E. Applicant/Agent's Printed Name	 Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	06-24-2016 Date

U.S. ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT

Action Id. **2012-00979** County: **Rutherford**

NOTIFICATION OF JURISDICTIONAL DETERMINATION

Property Owner/Applicant: **N.C. Department of Transportation**
Attn: Mr. William Barrett
1598 Mail Service Center
Raleigh, NC 27699-1598
Telephone No.: **919-707-6103**

Property description:

Size (acres)	**The study area is 10.5 acres in size and is shown on Figures 2 and 3 (attached)**
Nearest Town	**Alexander Mills**
Nearest Waterway	**Floyds Creek**
River Basin	**Upper Broad**
USGS HUC	**03050105**

Location/property description: **TIP No. B-5397. The study area is located at Bridge No. 51 over Floyds Creek on SR 2213 (Church Street) in Rutherford County, North Carolina.**

Indicate Which of the Following Apply:

A. Preliminary Determination

X Based on preliminary information, there may be waters of the United States (U.S.) on the above described property. We strongly suggest you have this property inspected to determine the extent of Department of the Army (DA) jurisdiction. To be considered final, a jurisdictional determination must be verified by the Corps. This preliminary determination is not an appealable action under the Regulatory Program Administrative Appeal Process (Reference 33 CFR Part 331). If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also, you may provide new information for further consideration by the Corps to reevaluate the JD.

B. Approved Determination

__ There are Navigable Waters of the U.S. within the above described property subject to the permit requirements of Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

__ There are waters of the U.S. on the above described property subject to the permit requirements of Section 404 of the Clean Water Act (CWA)(33 USC § 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

__ We strongly suggest you have the waters of the U.S. on your property delineated. Due to the size of your property and/or our present workload, the Corps may not be able to accomplish this wetland delineation in a timely manner. For a more timely delineation, you may wish to obtain a consultant. To be considered final, any delineation must be verified by the Corps.

__ The waters of the U.S. on your property have been delineated and the delineation has been verified by the Corps. We strongly suggest you have this delineation surveyed. Upon completion, this survey should be reviewed and verified by the Corps. Once verified, this survey will provide an accurate depiction of all areas subject to CWA jurisdiction on your property which, provided there is no change in the law or our published regulations, may be relied upon for a period not to exceed five years.

__ The waters of the U.S. have been delineated and surveyed and are accurately depicted on the plat signed by the Corps Regulatory Official identified below on ___. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

__ There are no waters of the U.S., to include wetlands, present on the above described property which are subject to the permit requirements of Section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

Placement of dredged or fill material within waters of the U.S. without a Department of the Army permit may constitute a violation of Section 301 of the Clean Water Act (33 USC § 1311). If you have any questions regarding this determination and/or the Corps regulatory program, please contact **Lori Beckwith** at **828-271-7980, ext. 223**.

C. Basis for Determination: N/A - Preliminary JD

D. Remarks: Approximate boundaries of waters of the U.S. are shown on Figure 3 (attached).

E. Attention USDA Program Participants

This delineation/determination has been conducted to identify the limits of Corps' Clean Water Act jurisdiction for the particular site identified in this request. The delineation/determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA Program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

F. Appeals Information (This information applies only to approved jurisdictional determinations as indicated in B above).

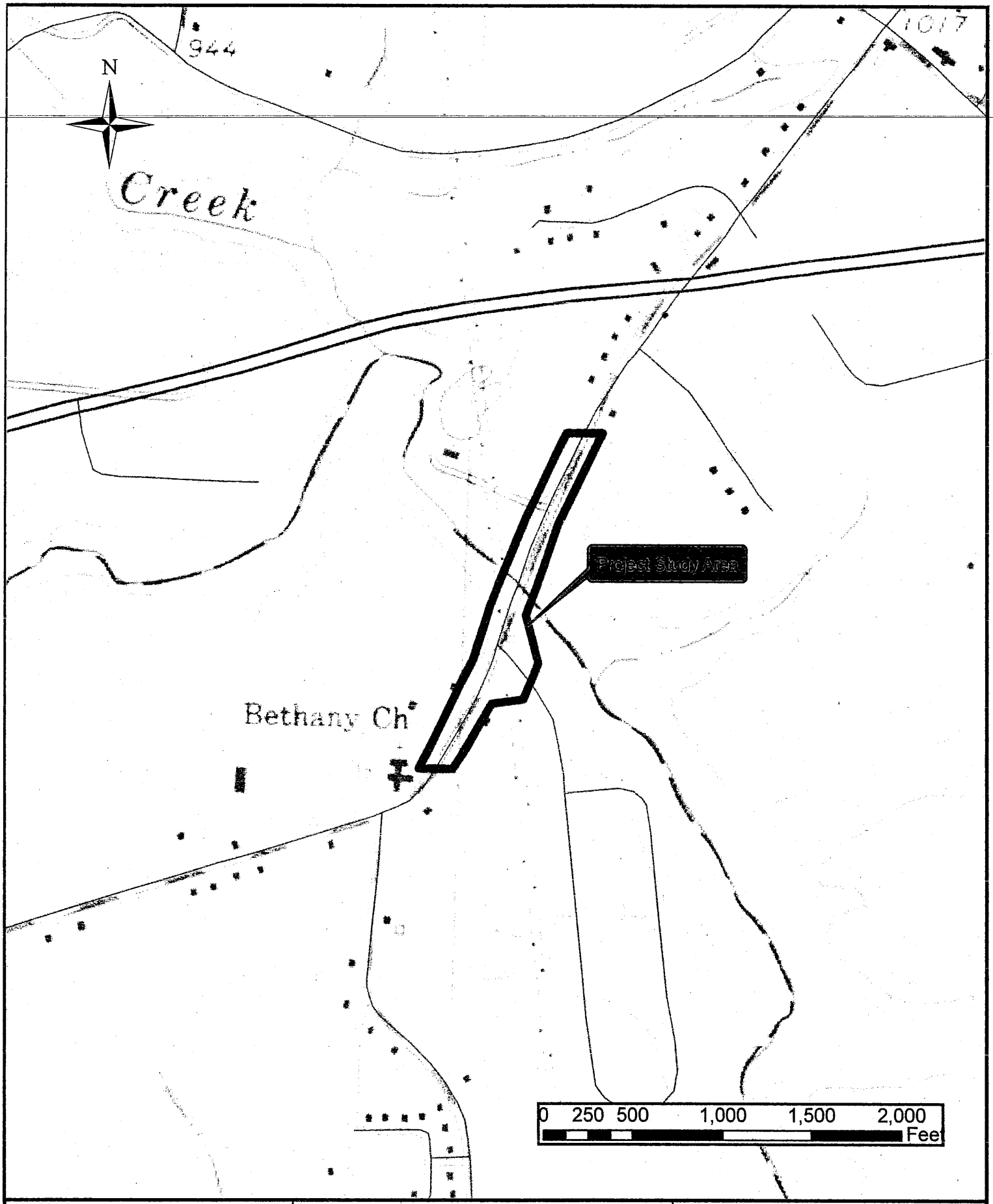
This correspondence constitutes an approved jurisdictional determination for the above described site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a request for appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the following address:

US Army Corps of Engineers
South Atlantic Division
Attn: Jason Steele, Review Officer
60 Forsyth Street SW, Room 10M15
Atlanta, Georgia 30303-8801
Phone: (404) 562-5137

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by September 4, 2012.
It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this correspondence.

Corps Regulatory Official: **Lori Beckwith** BECKWITH.LORETTA.ANN.1173452264 Digitally signed by BECKWITH.LORETTA.ANN.1173452264 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=BECKWITH.LORETTA.ANN.1173452264 Date: 2012.07.06 14:11:50 -04'00'

Issue Date: **July 6, 2012** Expiration Date: **N/A – Preliminary JD**

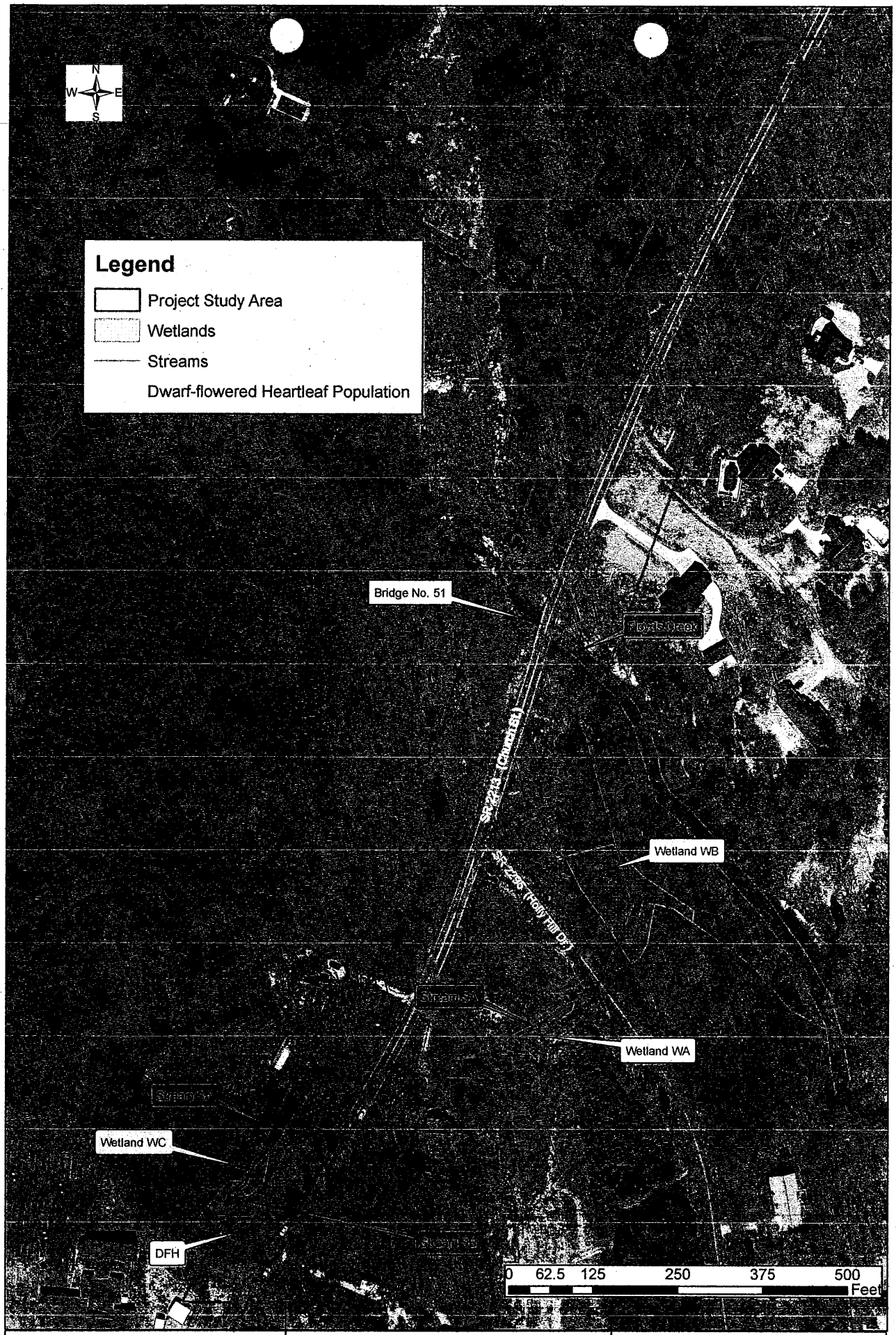


NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS

REPLACE BRIDGE No. 51
ON SR 2213 OVER FLOYDS CREEK
RUTHERFORD COUNTY
WBS NO. 46112.1.1
TIP No. B-5397

PROJECT STUDY AREA MAP

FIGURE 2



NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS

REPLACE BRIDGE No. 51
ON SR 2213 OVER FLOYDS CREEK
RUTHERFORD COUNTY
WBS NO. 46112.1.1
TIP No. B-5397

JURISDICTIONAL FEATURES MAP

FIGURE 3

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): July 6, 2012

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD: William A. Barrett, NCDOT, 1598 Mail Service Center, Raleigh, NC 27699-1598

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: CESAW-RG- SAW-2012-00979 NCDOT / PJD / B-5397 / Div 13

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
TIP: B-5397 Description: NCDOT proposes to replace bridge No. 51 on SR 2213 (Bethany Church Rd.) over Floyds Creek.
(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)
State: NC County/parish/borough: Rutherford City: Alexander
Center coordinates of site (lat/long in degree decimal format):
Lat. 35.306°**N**, Long. -81.891° **W**
Universal Transverse Mercator:
Name of nearest waterbody: Floyds Creek

Identify (estimate) amount of waters in the review area:
Non-wetland waters: 562 linear feet: width (ft) and/or acres.
Cowardin Class: Riverine
Stream Flow: Perennial
Wetlands: 0.20 acres.
Cowardin Class: Forested and Emergent

Name of any water bodies on the site that have been identified as Section 10 waters:
Tidal: N/A
Non-Tidal: N/A

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):
☒ Office (Desk) Determination Date: USACE 7/6/12
☒ Field Determination Date(s): NCDOT 4/10/12

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this

preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable. This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA: Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant

☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant

- ☐ Office concurs with data sheets/delineation report.
- ☐ Office does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps:

☐ Corps navigable waters' study:

☐ U.S. Geological Survey Hydrologic Atlas:

- ☐ USGS NHD data.
- ☐ USGS 8 and 12 digit HUC maps

☒ U.S. Geological Survey map(s). Cite scale & quad name: 1:24000; Rutherford South

☐ USDA Natural Resources Conservation Service Soil Survey Citation:

☐ National wetlands inventory map(s). Cite name:

☐ State/Local wetland inventory map(s):

☐ FEMA/FIRM maps:

☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)

☐ Photographs: ☐ Aerial (Name & Date): or ☐ Other (Name & Date):

☐ Previous determination(s). File no. and date of response letter:

☐ Other information (please specify):

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Lynnette A. Beckham July 6, 2012

Signature and date of Regulatory Project Manager (REQUIRED)

7/5/2012

Signature and date of person requesting preliminary JD (REQUIRED, unless obtaining the signature is impracticable)

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.02; Released April 2015)

WBS Element: 46112.1.1 **TIP No.:** B-5397 **County(ies):** Rutherford

General Project Information

WBS Element:	46112.1.1	**TIP Number:**	B-5397	**Project Type:**	Bridge Replacement	**Date:**	6/10/2015
NCDOT Contact:	Bill Zerman, PE			**Contractor / Designer:**	Sungate Design Group		
Address:	Hydraulics Unit 1590 Mail Service Center Raleigh, NC 27699-1590			**Address:**	915 Jones Franklin Road Raleigh, NC 27606		
Phone:	(919) 707-6755			**Phone:**	(919) 859-2243		
Email:	bzerman@ncdot.gov			**Email:**	jdalton@sungatedesign.com		
City/Town:	Forest City			**County(ies):**	Rutherford		
River Basin(s):	Broad			**CAMA County?**	No		
Wetlands within Project Limits?	No						

Project Description

Project Length (lin. miles or feet):	0.137 Miles	**Surrounding Land Use:**	Rural

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	0.6 ac.	0.4 ac.
Typical Cross Section Description:	Paved 11' lanes with 6' shoulder section (4' paved and 2' grassed)	Paved 11' lanes with 4' grassed shoulder section
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 5400 Year: 2040	Existing: 5000 Year: 2017
General Project Narrative: (Description of Minimization of Water Quality Impacts)	Project B-5397 is replacement of Bridge #800051 in Rutherford County on SR 2213 (Bethany Church Road) over Floyds Creek. The proposed bridge consists of a 1@100' 39" box beam bridge with 4' end bent caps. The existing bridge is 3 @ 25' steel I-beam with timber deck, timber bents with rip rap spill through abutments. The proposed bridge will require deck drains, however no drains will be discharged over the open water. Deck drain dissipator pads have been specified 4' wide with class B rip rap to prevent erosion. Existing drainage patterns have been maintained. A rip rap lined ditch is proposed along the left side of the roadway that will convey runoff from an existing ditch to the stream. The streambank will be lined with rip rap where the ditch intersects Floyds Creek. Runoff from the bridge deck will be collected by an inlet and piped down the fill slope to a rip rap dissipator pad. A 4' paved shoulder will be added throughout the length of the project which is the main cause of the increased impervious area.	

Waterbody Information

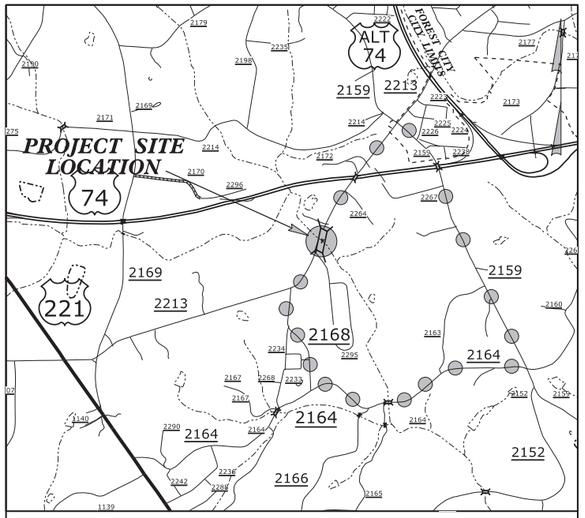
Surface Water Body (1):	Floyds Creek		**NCDWR Stream Index No.:**	9-37	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	N/A			**Buffer Rules in Effect:**	N/A
Project Includes Bridge Spanning Water Body?	Yes	**Deck Drains Discharge Over Buffer?**	No	**Dissipator Pads Provided in Buffer?**	No
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

09/08/99

TIP PROJECT: B–5397

CONTRACT:

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



VICINITY MAP

OFF-SITE DETOUR ROUTE N.T.S.

Final R/W Plans

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RUTHERFORD COUNTY

LOCATION: BRIDGE NO. 51 OVER FLOYDS CREEK ON SR 2213 (BETHANY CHURCH ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

WETLAND AND SURFACE WATER IMPACTS PERMIT

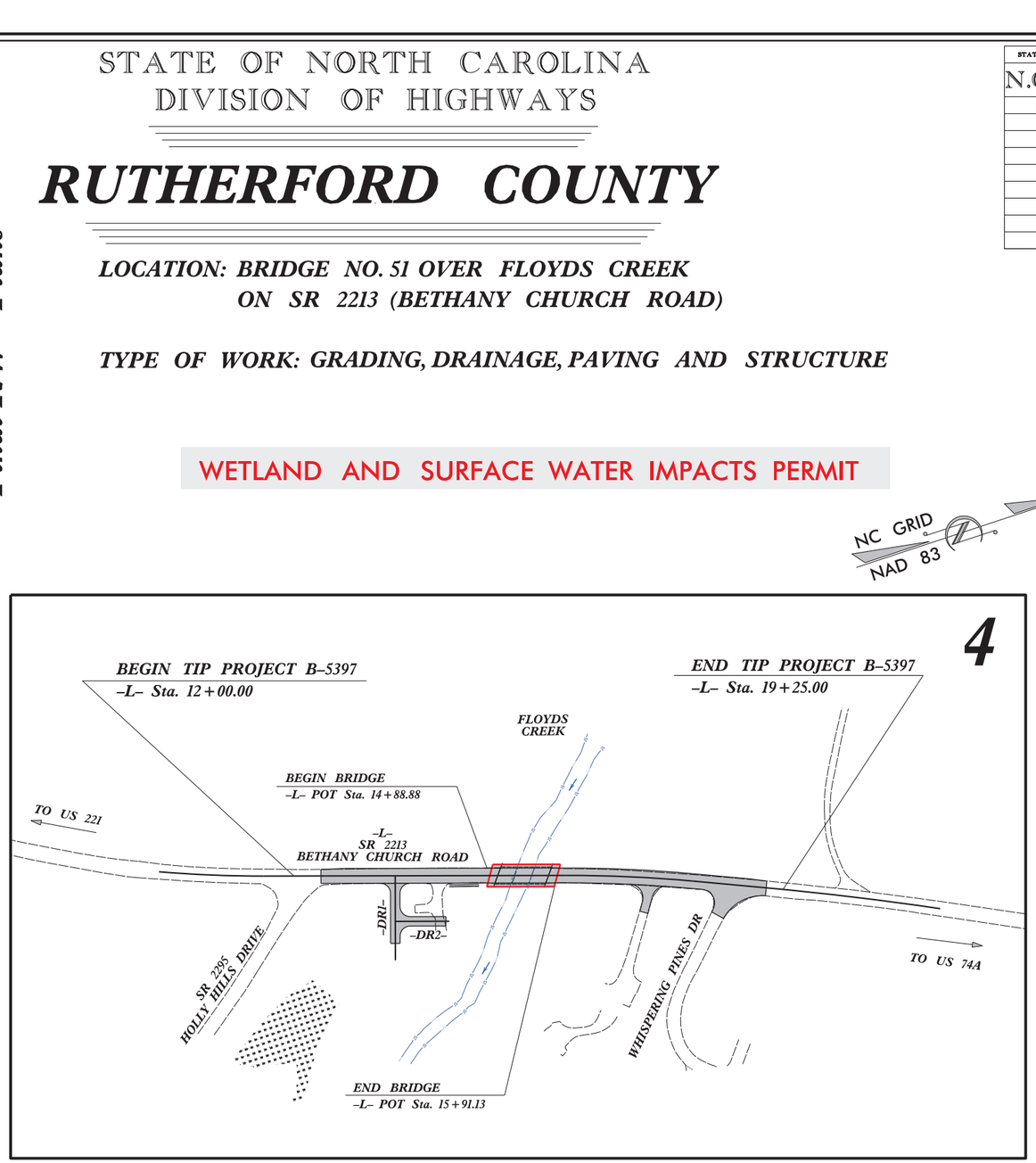
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–5397	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
46112.1.1	BRZ–2213(2)	P.E.
46112.2.1	BRZ–2213(2)	R/W
46112.2.1	BRZ–2213(2)	UTILITY

PERMIT DRAWING
SHEET 1 OF 5

NC GRID
NAD 83

4



CLEARING ON THIS PROJECT SHALL BE PERFORMED TO LIMITS ESTABLISHED BY METHOD II.

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2017 = 5,000
ADT 2040 = 5,400
K = 10 %
D = 55 %
T = 6 % *
V = 40 MPH
* TTST = 1% DUAL 5%
FUNC CLASS =
LOCAL
SUB–REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B–5397	=	0.118 mi.
LENGTH STRUCTURE TIP PROJECT B–5397	=	0.019 mi.
TOTAL LENGTH TIP PROJECT B–5397	=	0.137 mi.

PLANS PREPARED BY:

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

PLANS PREPARED FOR:

DIVISION OF HIGHWAYS
1000 Birch Ridge Dr.
Raleigh, NC 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
FEBRUARY 19, 2016

LETTING DATE:
FEBRUARY 21, 2017

BRIAN A. WILES, PE
PROJECT ENGINEER

REKHA PATEL, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

2/17/2016
B5397_Hyd_prm_wet_psh_01.dgn
jharvey

5/14/99

DETAIL #1
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Min. D=1.5 Ft.
Max. d=1.5 Ft.
B=2.0 Ft.

Type of Liner= Class B Rip-Rap
FROM STA. 14+25 TO STA. 14+95 -L- LT

DETAIL #2
STANDARD BASE DITCH
(Not to Scale)

Min. D=1.5 Ft.
Max. d=1.5 Ft.
B=2.0 Ft.
*When B is < 6.0'

Type of Liner= Class B Rip-Rap
FROM STA. 14+95 TO STA. 15+20 -L- LT

S S DENOTES IMPACTS IN SURFACE WATER

NC GRID
NAD 83

CH ENGINEERING
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NC LICENSE #P-0189

PROJECT REFERENCE NO.	SHEET NO.
B-5397	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 2 OF 5

DETAIL #3
RIP RAP AT EMBANKMENT
(Not to Scale)

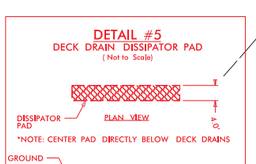
Type of Liner= 32 TONS,CL 'I' Rip-Rap
Geotextile= 35 sy
FROM STA. 15+20 TO STA. 15+40 -L- LT

DETAIL #4
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

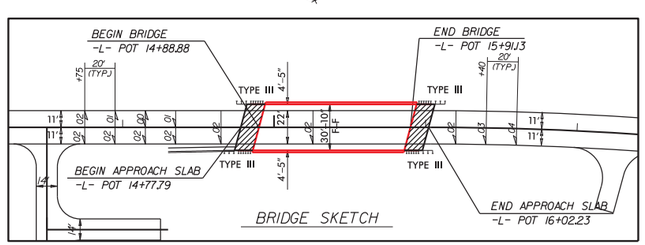
Min. D=1.5 Ft.
Max. d=1.5 Ft.
Type of Liner= Class B Rip-Rap
FROM STA. 17+15 TO STA. 17+50 -L- LT

10+00
15+00
20+00
Site 1
REBAR
REBAR
(2) HAZEL T. KISER
(3) GAYLORD H. COWAN
WOODS
RIP RAP AT EMBANKMENT SEE DETAIL #3
STD. 2' BASE DITCH W/CL B RIP RAP SEE DETAIL #2
CLASS II RIP RAP TO TOP OF BERM
SPEC. LAT. 2' BASE DITCH W/CL B RIP RAP SEE DETAIL #1
SECONDARY GROWTH
BRIDGE #51 TIMBER DECK ON STEEL BEAMS
FLOYDS CREEK
SPEC. LAT. V DITCH W/CL B RIP RAP SEE DETAIL #4
SECONDARY GROWTH
DAYLIGHT DITCH CLASS B RIP RAP EST 3 TONS EST. 10 SY GEOTEXTILE
EXISTING BRIDGE TO BE REMOVED
CLASS II RIP RAP TO TOP OF BERM
DUKE POWER COMPANY EXISTING R/W
34.00'
60.00'
45.00'
(DATUM)
8" PVC
12" DIP
12" DIP EXISTING R/W
TO US 221
SIZE UNKNOWN
GRAU 350 (TL-3)
N 18° 08' 16.7" E
N 23° 30' 26.4" E
400PR
22 BST
48 ST
EXISTING R/W
GRAVEL
DENA L. JENKINS
WOODS
EIP
(1) JACK HICKSON DAVIS FAMILY TRUST
SECONDARY GROWTH
HOLLY HILLS DR.
SR 2205
TOWN OF FOREST CITY
(4)
(5) CLAUDE LUTHER STREET, JR.
(6) CANDACE SAMANTHA DORSEY
WHISPERING PINES DR.
PRIVATE
BETHANY CHURCH ROAD SR 2213
TO US 74A
TR 2GR NSEC
GRADE TO DRAIN
ELIMINATE CUT DITCH STA. 12+25 TO 13+00 -L- RT
SHOULDER BERM GUTTER STA. 15+20 -L- RT TO BEGIN APPROACH SLAB
RIP-RAP APRON SLAB
15" W/ELBOWS
CL B RIP RAP EST 1 TON EST 5 SY GEOTEXTILE
DECK DRAIN DISSIPATOR PADS SEE DETAIL #5
7' CONC HW
30" HDPE
12' CONC DIP
CONC DITCH
BRICK COLUMNS
18" DRY STACK BLOCK WALL
FIBER PEDS
6' CONC HW
14" DIP
8" DI
POOL
2SFD
1-1/2 SBKD
GAZEBO
CONC
FOR PROFILES, SEE SHEET 5

DETAIL #5
DECK DRAIN DISSIPATOR PAD
(Not to Scale)



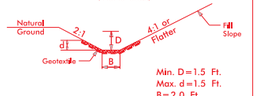
L= 21' and 31'
Type of Liner= 11 TONS CL B Rip-Rap
Geotextile= 54 sy
FROM STA. 14+93 TO STA. 15+14 -L- RT
FROM STA. 15+50 TO STA. 15+81 -L- RT



2/17/2016
B5397_hyd_prm_wet_psh_04.dgn
harvell

5/14/99

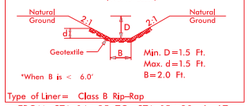
DETAIL #1
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D=1.5 Ft.
Max. d=1.5 Ft.
B=2.0 Ft.

Type of Liner= Class B Rip-Rap
FROM STA. 14+25 TO STA. 14+95 -L- LT

DETAIL #2
STANDARD BASE DITCH
(Not to Scale)



Min. D=1.5 Ft.
Max. d=1.5 Ft.
B=2.0 Ft.
*When B is < 6.0'

Type of Liner= Class B Rip-Rap
FROM STA. 14+95 TO STA. 15+20 -L- LT

S S DENOTES IMPACTS IN SURFACE WATER

NC GRID
NAD 83

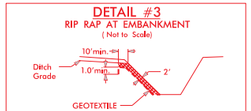
CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

PROJECT REFERENCE NO.	SHEET NO.
B-5397	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

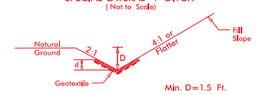
PERMIT DRAWING SHEET 3 OF 5

DETAIL #3
RIP RAP AT EMBANKMENT
(Not to Scale)

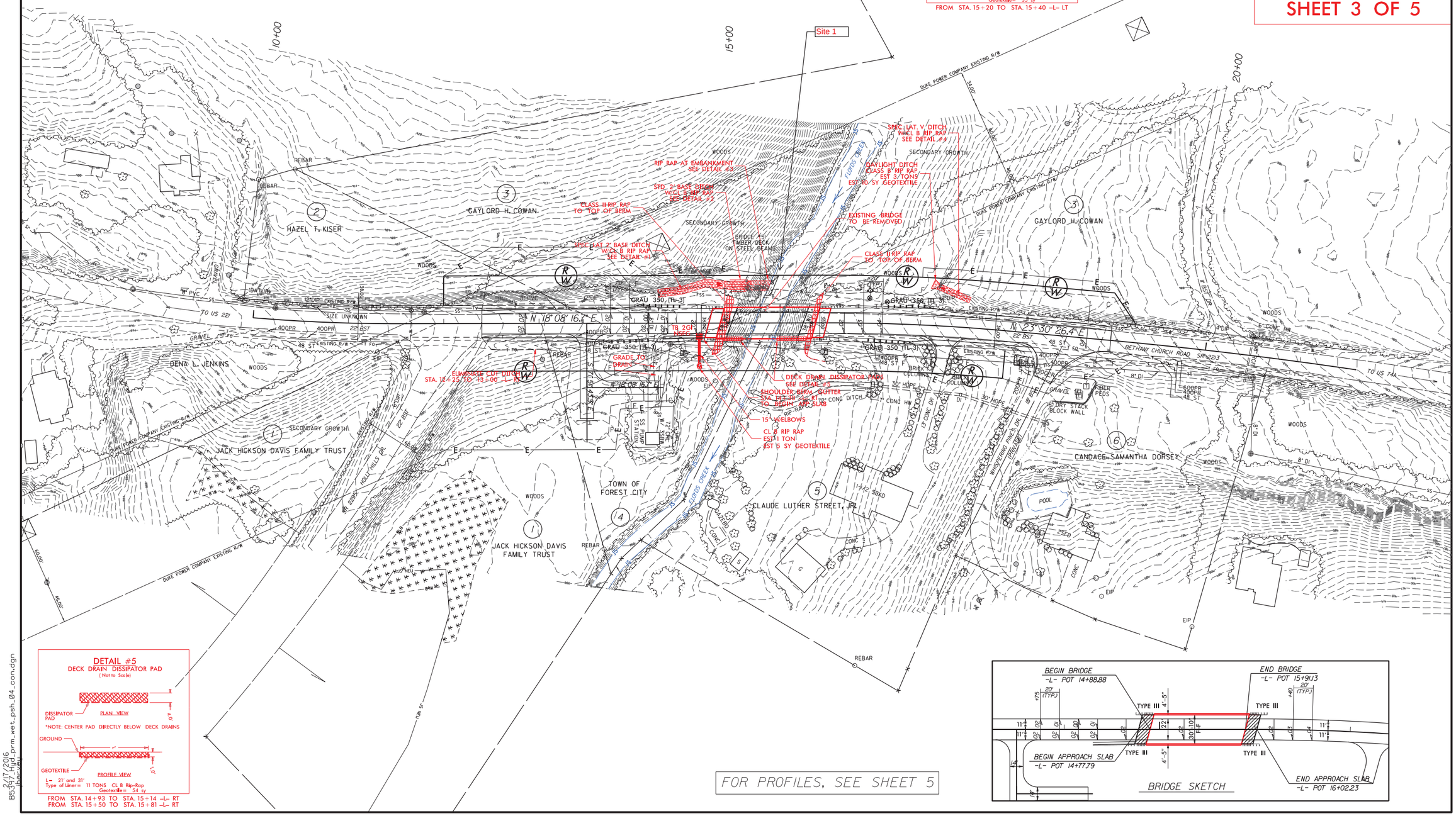


Type of Liner= 32 TONS,CL 1 Rip-Rap
Geotextile= 35 sy
FROM STA. 15+20 TO STA. 15+40 -L- LT

DETAIL #4
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D=1.5 Ft.
Max. d=1.5 Ft.
Type of Liner= Class B Rip-Rap
FROM STA. 17+15 TO STA. 17+50 -L- LT



DETAIL #5
DECK DRAIN DISSIPATOR PAD
(Not to Scale)

L= 21' and 31'
Type of Liner= 11 TONS CL B Rip-Rap
Geotextile= 54 sy
FROM STA. 14+93 TO STA. 15+14 -L- RT
FROM STA. 15+50 TO STA. 15+81 -L- RT

FOR PROFILES, SEE SHEET 5

B5397_tyl_prm_wet_psh_04_con.dgn
3/17/2016
jhardy

5/28/99

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PROJECT REFERENCE NO.	SHEET NO.
B-5397	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 4 OF 5

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BM 1 ELEV = 870.68'
N 578,734 E 1,137,764
-L- STA 14+45.63 91.70' RIGHT
RR SPIKE IN BASE OF 12" SWEETGUM

BEGIN GRADE
-L- STA 12+40.00
EL = 886.02'

PI = 13+75.00
EL = 879.90'
VC = 250'
K = 49
V = 35 mph

PI = 17+25.00
EL = 881.87'
VC = 240'
K = 54
V = 35 mph

END GRADE
-L- STA 19+00.00
EL = 890.64'

EXISTING BRIDGE TO BE REMOVED (STR PAY ITEM)

PROPOSED GRADE

EXCAVATE TO APPROX. ELEV 870.0 AT CL EST 105 CY (STR PAY ITEM)

EXCAVATE TO APPROX. ELEV 873.0 AT CL EST 55 CY (STR PAY ITEM)

(+)0.56294

(-)4.53335

(-)8.00%

(+)5.01147

(+)10.60%

BEG SPEC LAT BASE DITCH STA 14+25.0 -L- LT EL = 877.9

EXISTING GROUND

SPEC LAT BASE DITCH STA 14+50.0 -L- LT EL = 877.0

CLASS II RIP RAP 1.5:1 NORMAL 1.5:1 SKEWED (STR PAY ITEM)

MIN 3.5'

PROP 100 YR=870.68

PROP 25 YR=869.7

BEG STD BASE DITCH STA 14+95 -L- LT EL = 873.4

END STD BASE DITCH STA 15+20 -L- LT EL = 871.4

WSWE ON 3-2-15 =861.6

BEG SPEC LAT 'V' DITCH STA 17+50.0 -L- LT EL = 882.5

END SPEC LAT 'V' DITCH STA 17+50.0 -L- LT EL = 879.0

NOTE: DRAINAGE EXCAVATION (STR PAY ITEM) UNDER STRUCTURE TO BE PERFORMED PRIOR TO SUPERSTRUCTURE CONSTRUCTION.

FOR PLAN, SEE SHEET 4

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 2,100	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 869.7	FT
BASE DISCHARGE	= 2,800	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 870.68	FT
OVERTOPPING DISCHARGE	= 3,600+	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 880.5	FT
DATE OF SURVEY	= March 2, 2015	
W.S. ELEVATION AT DATE OF SURVEY	= 861.6	FT

-DR1-

-DR1- 10+00.00 = -L- 13+50.00
EL = 882.05'

E.O. PV. SH. = 10+15.00
EL = 881.75'

PI = 10+30.00
EL = 881.10'
VC = 30'
K = 3

PI = 10+55.00
EL = 877.00'
VC = 20'
K = 1

END GRADE
-DR1- STA. 11+00.00
EL = 875.90'

(-)4.35871

(-)16.40000

(-)12.44441

-DR2-

-DR2- 10+00.00 = -DR1- 10+67.50
EL = 876.69'

E.O. PV. = 10+10.00
EL = 876.49'

END GRADE
-DR2- STA. 10+75.00
EL = 872.00'

(-)5.91455

2/17/2016
B5397_hyd_prm_wet_psh_05.dgn
harvell

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	15+30 -L- LT	Rip Rap Embankment						< 0.01		22		
TOTALS*:								< 0.01		22	0	0

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
11-16-15
RUTHERFORD COUNTY
B-5397
46112.1.1
SHEET 4 OF 4

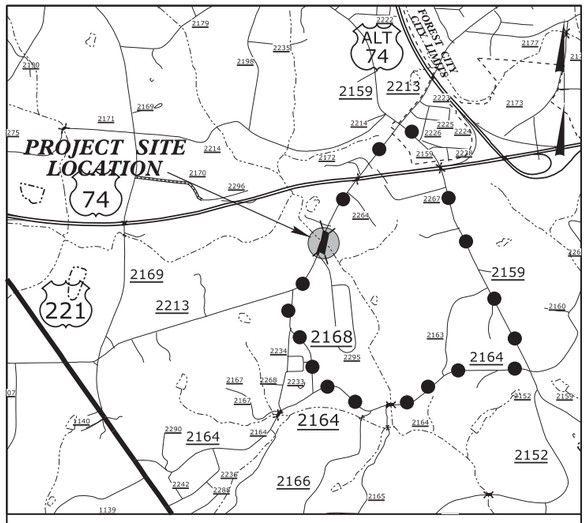
Revised 2013 10 24

09/08/99

TIP PROJECT: B-5397

CONTRACT:

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



VICINITY MAP

OFF-SITE DETOUR ROUTE

N.T.S.

Final R/W Plans

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RUTHERFORD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5397	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
46112.1.1	BRZ-2213(2)	P.E.
46112.2.1	BRZ-2213(2)	R/W
46112.2.1	BRZ-2213(2)	UTILITY

LOCATION: BRIDGE NO. 51 OVER FLOYDS CREEK ON SR 2213 (BETHANY CHURCH ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

NC GRID
NAD 83

4

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO LIMITS ESTABLISHED BY METHOD II.

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2017 = 5,000
ADT 2040 = 5,400
K = 10 %
D = 55 %
T = 6 % *
V = 40 MPH
* TTST = 1% DUAL 5%
FUNC CLASS = LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5397 = 0.118 mi.
LENGTH STRUCTURE TIP PROJECT B-5397 = 0.019 mi.
TOTAL LENGTH TIP PROJECT B-5397 = 0.137 mi.

PLANS PREPARED BY:
CH ENGINEERING
3220 GLEN ROYAL RD, RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

PLANS PREPARED FOR:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr.
Raleigh, NC 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: FEBRUARY 19, 2016

LETTING DATE: FEBRUARY 21, 2017

BRIAN A. WILES, PE
PROJECT ENGINEER

REKHA PATEL, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

1/29/2016
R:\Roadway\Proj\B5397_Rdy_tsh.dgn
USERNAME=

04/06/15

PROJECT REFERENCE NO.	SHEET NO.
B-5397	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- U/G Power Line LOS B (S.U.E.*) — P
- U/G Power Line LOS C (S.U.E.*) — P
- U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- U/G Telephone Cable LOS B (S.U.E.*) — T
- U/G Telephone Cable LOS C (S.U.E.*) — T
- U/G Telephone Cable LOS D (S.U.E.*) — T
- U/G Telephone Conduit LOS B (S.U.E.*) — TC
- U/G Telephone Conduit LOS C (S.U.E.*) — TC
- U/G Telephone Conduit LOS D (S.U.E.*) — TC
- U/G Fiber Optics Cable LOS B (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS C (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS D (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*) — W
- U/G Water Line LOS C (S.U.E*) — W
- U/G Water Line LOS D (S.U.E*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- U/G TV Cable LOS B (S.U.E.*) — TV
- U/G TV Cable LOS C (S.U.E.*) — TV
- U/G TV Cable LOS D (S.U.E.*) — TV
- U/G Fiber Optic Cable LOS B (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS C (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS D (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) — G
- U/G Gas Line LOS C (S.U.E.*) — G
- U/G Gas Line LOS D (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-5397	1C-1
Location and Surveys	

SURVEY CONTROL SHEET B–5397

(PRELIMINARY)

BL

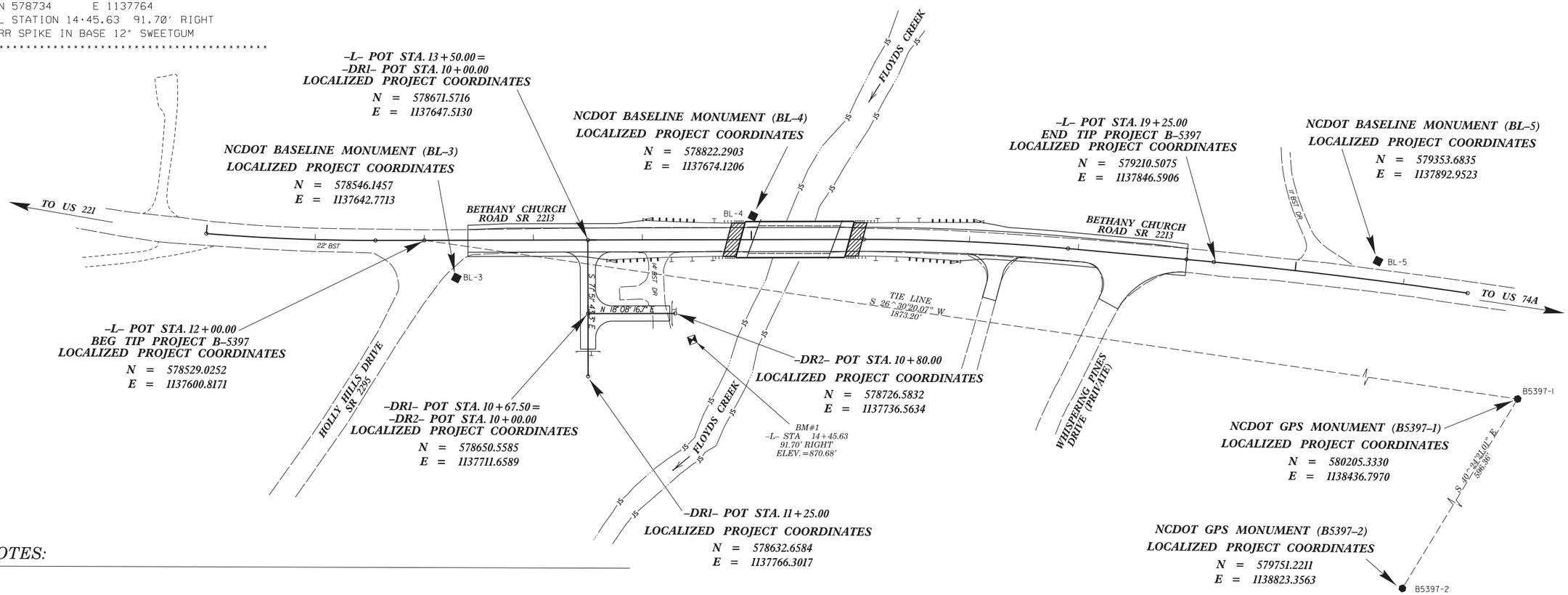
POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
GPS-1	B-5397-1	580205.3330	1138436.7970	955.96	OUTSIDE PROJECT LIMITS	
GPS-2	B-5397-2	579751.2211	1138823.3563	933.35	OUTSIDE PROJECT LIMITS	
3	BL-3	578546.1457	1137642.7713	885.36	12+29.33	34.54 RT
4	BL-4	578822.2903	1137674.1206	875.18	15+01.51	21.63 LT
5	BL-5	579353.6835	1137892.9523	898.02	20+74.17	17.76 LT

****

BM1 ELEVATION = 870.68
N 578734 E 1137764
L STATION 14+45.63 91.70' RIGHT
RR SPIKE IN BASE 12" SWEETGUM

****

NC GRID NAD 83



NOTES:

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
   HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   B5397_LS_CONTROL.TXT

   SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

● INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

NOTE: DRAWING NOT TO SCALE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5397-1" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 580205.333(ft) EASTING: 1138436.797(ft) ELEVATION: 955.96(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999753505
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5397-1" TO -L- STATION 12+00.00 IS S 26°30'20.07" W 1,873.20'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 88

6/2/2016
K:\Projects\Proj\B5397_ls_1C-1.dgn
USERNAME

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-5397	1C-2
Location and Surveys	

SURVEY CONTROL SHEET B-5397
(PRELIMINARY)

(DESIGN ALIGNMENTS)

-L-

L

TYPE	STATION	NORTH	EAST
PC	10+00.00	578341.1952	1137532.3436
PT	11+55.21	578486.4650	1137586.8750
PC	16+03.25	578912.2417	1137726.3526
PT	17+90.68	579087.3627	1137792.9540
PC	18+99.87	579187.4942	1137836.5077
PT	21+59.49	579422.6011	1137946.5527

-DRIVES-

DR1

TYPE	STATION	NORTH	EAST
POT	10+00.00	578671.5716	1137647.5130
POT	11+25.00	578632.6584	1137766.3017

DR2

TYPE	STATION	NORTH	EAST
POT	10+00.00	578650.5585	1137711.6589
POT	10+80.00	578726.5832	1137736.5634

(ROW MARKERS)

-L-

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+00.00	-19.00	578534.9400	1137582.7612
L	12+00.00	-50.00	578544.5905	1137553.3016
L	12+23.26	50.00	578535.5596	1137655.5721
L	16+03.25	-50.00	578927.8070	1137678.8371
L	16+03.25	50.00	578896.6764	1137773.8681
L	17+90.68	-50.00	579107.3060	1137747.1036
L	17+90.68	50.00	579067.4193	1137838.8045
L	17+90.68	19.95	579079.4059	1137811.2469
L	18+99.87	-50.00	579207.4375	1137790.6573
L	19+25.00	-19.00	579218.1785	1137829.2080

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   B5397_LS_CONTROL.TXT

   SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

- *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*
  PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
  NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
  SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5397-1" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 580205.333(ft) EASTING: 1138436.797(ft) ELEVATION: 955.96(ft)
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THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5397-1" TO -L- STATION 12+00.00 IS S 26°30'20.07" W 1,873.20'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 88

6/2/2016
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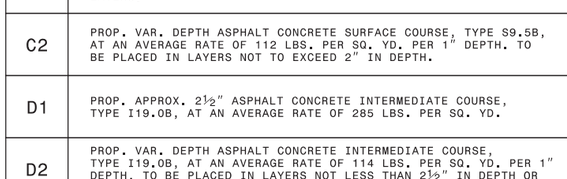
USERNAME

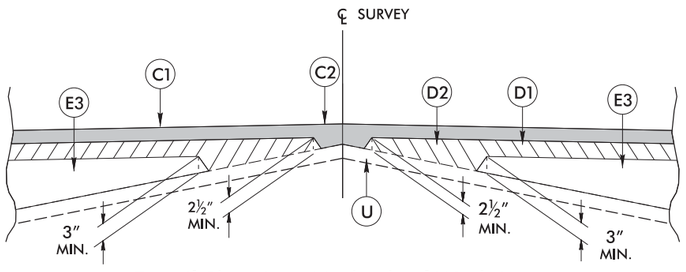
6/2/99

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2″ IN DEPTH.
D1	PROP. APPROX. 2½″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.
E1	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. APPROX. 7″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3″ IN DEPTH OR GREATER THAN 5½″ IN DEPTH.
J1	PROP. 8″ AGGREGATE BASE COURSE.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL THIS SHEET)

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



Incidental Milling Existing Pavement

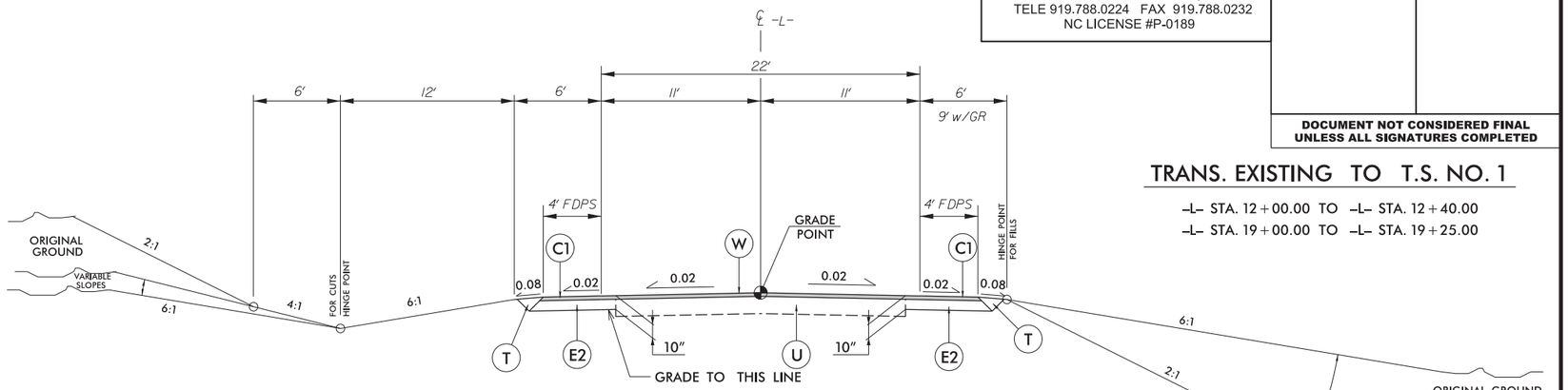


Detail Showing Method of Wedging

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

PROJECT REFERENCE NO.	SHEET NO.
B-5397	2A-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

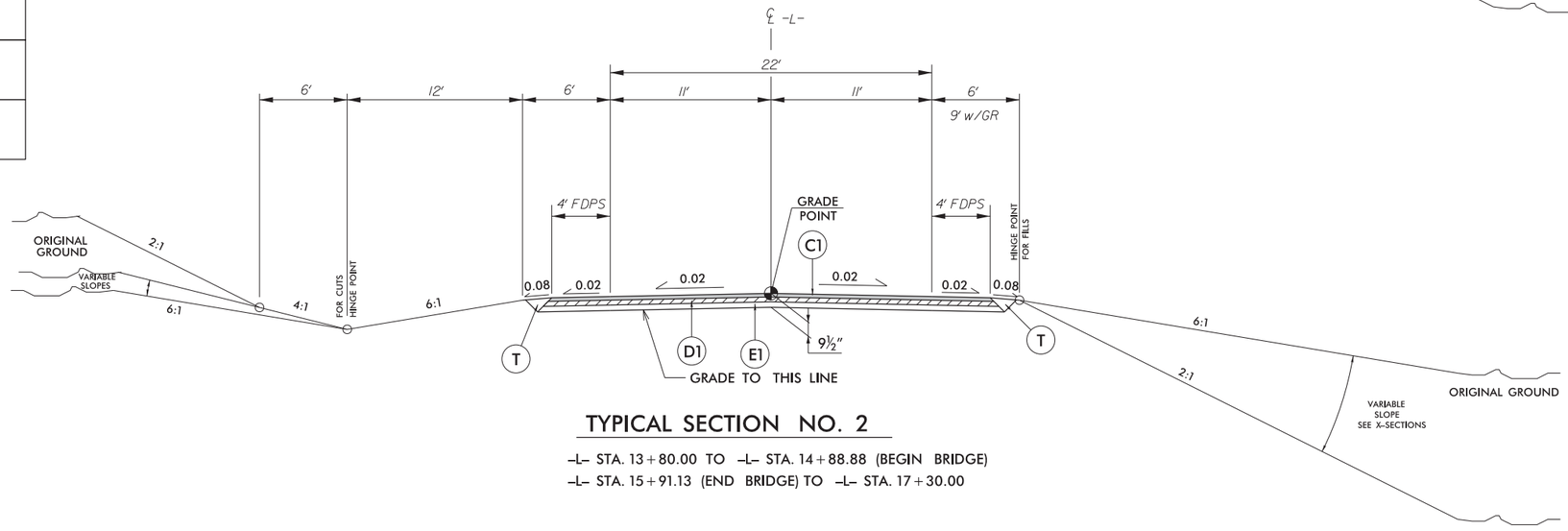


TYPICAL SECTION NO. 1

–L– STA. 12+40.00 TO –L– STA. 13+80.00
–L– STA. 17+30.00 TO –L– STA. 19+00.00

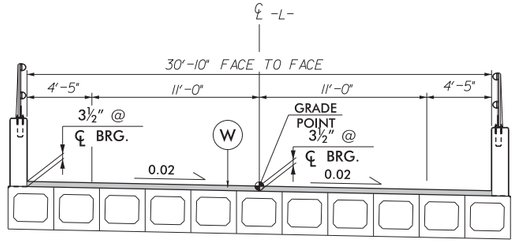
TRANS. EXISTING TO T.S. NO. 1

–L– STA. 12+00.00 TO –L– STA. 12+40.00
–L– STA. 19+00.00 TO –L– STA. 19+25.00



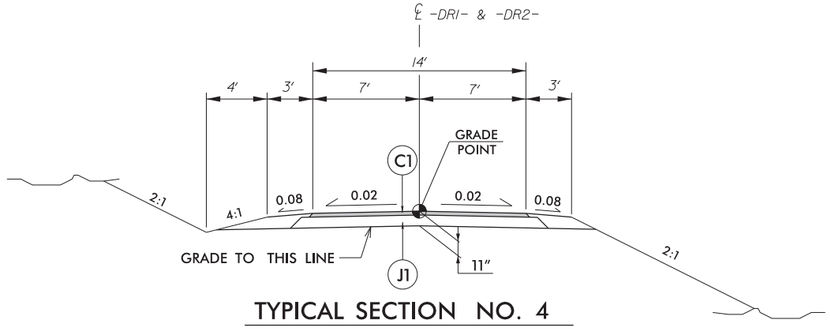
TYPICAL SECTION NO. 2

–L– STA. 13+80.00 TO –L– STA. 14+88.88 (BEGIN BRIDGE)
–L– STA. 15+91.13 (END BRIDGE) TO –L– STA. 17+30.00



TYPICAL SECTION NO. 3

–L– STA. 14+88.88 (BEGIN BRIDGE) TO –L– STA. 15+91.13 (END BRIDGE)



TYPICAL SECTION NO. 4

–DR1– STA. 10+15.00 TO –DR1– STA. 11+00.00
–DR2– STA. 10+10.00 TO –DR2– STA. 10+75.00

1/29/2016
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USERNAME

12/06/07

COMPUTED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-5397	3B-1

SUMMARY OF EARTHWORK

IN CUBIC YARDS

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
–L– 12+40	14+88.88	1,169	972		197
–DR1– 10+00	11+00	0	559	559	
–DR2– 10+00	10+75	19	122	103	
	SUBTOTAL	1,188	1,653	662	197
–L– 15+91.13	19+00	507	1,285	778	
	SUBTOTAL	507	1,285	778	
SUBTOTAL		1,695	2,938	1,440	197
TOTAL		1,695	2,938	1,440	197
LOSS DUE TO CLEARING & GRUBBING		–0		0	
WASTE IN LIEU OF BORROW				–197	–197
PROJECT TOTAL		1,695	2,938	1,243	0
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				62	
GRAND TOTALS:		1,695		1,305	
SAY:		1,750		1,350	

SHALLOW UNDERCUT EXCAVATION CONTINGENCY PER GEOTECH REPORT = 50 CUBIC YARDS
UNDERCUT EXCAVATION CONTINGENCY PER GEOTECH REPORT = 50 CUBIC YARDS
SELECT GRANULAR MATERIAL PER GEOTECH REPORT = 50 CUBIC YARDS

Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

Note: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Shoulder Excavation, Fine Grading, Clearing and Grubbing, Breaking of Existing Pavement, and Removal of Asphalt Pavement will be paid for at the contract lump sum price for grading.

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
L	13+80	15+02	CL	298
L	15+76	17+30	CL	376
			TOTAL:	674
			SAY:	680

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
L	14+30	14+74	44
		TOTAL:	44
		SAY:	45

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350			SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350	M-350	TYPE III	CAT-1	VI MOD	BIC	TERM SECT	EA	G	NG				
L	14+00.34	14+94.09	LT	93.75				14+90	6	9		50		1			1		1											
L	13+67.16	14+85.91	RT	118.75			14+70		6	9	50		1				1		1											
L	15+94.09	17+12.84	LT	118.75			15+95		6	9	50		1				1		1											
L	15+85.91	16+92.16	RT	106.25				16+00	6	9		50		1			1		1											
DR1	11+02.00		CL	18.75																			2							
DR2	10+77.00		CL	18.75																			2							
		SUBTOTAL		475.00													4		4				4							
		LESS ANCHOR DEDUCTIONS																												
		GRAU-350 4 @ 50'		-200.00																										
		TYPE III 4 @ 18.75'		-75.00																										
		TOTAL		200.00													4		4				4							
		SAY		200			ADDITIONAL GUARDRAIL POSTS 5 EACH										4		4				4							

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CHECKED BY:_____ DATE:_____

PROJECT REFERENCE NO.	SHEET NO.
B-5397	3D-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
14+68	RT	0401		880.1	877.1														
		0401	0402		877.1	870.0			28							X			
TOTALS									28										

STATION	C.S. PIPE THICKNESS OR GAUGE 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	*** R.C. PIPE (CLASS V)	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE
14+68																												
TOTALS																												

STATION	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') PER EACH (0' THRU 5.0')	LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	T.B.D.I. STD. 840.35	G.D.I. FRAME WITH TWO N.S. FLAT GRATES STD. 840.29	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD 840.72	PIPE REMOVAL LIN.FT.	REMARKS
14+68			1										1		1							
																				2@15'		
TOTALS			1										1		1					2@15'		

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54" & OVER)

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) SIZE 54"	60"	66"	72"	78"	84"	BITUMINOUS COATED C.S. PIPE TYPE B 54" .109	.138	.168	SHOP ELON-GATED .138	.168	60" .138	.168	66" .138	.168	72" .138	.168	STRUCTURAL PLATE PIPE 60" 12	10	66" 12	10	72" 12	10

STATION	REINFORCED ENDWALLS WITH R.C. – C.Y.	WITH C.S. – C.Y.	MASONARY DRAINAGE STRUCTURES CUBIC YARDS	C.B. STD. 840.01 OR 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	R.C. ENDWALL– SINGLE 66" PIPE 90° SKEW STD. 838.33	REINF. CONC. FLARED END SECTIONS NO. & SIZE	CORR. STEEL FLARED END SECTIONS NO. & SIZE	REINF. CONC. ELBOWS NO. & SIZE	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	PIPE REMOVAL LIN.FT.	REMARKS

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

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(4-21-15)

PROJECT NO.	SHEET NO.
B-5397	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location	Drain Type*	LF
CONTINGENCY				SD	100
				TOTAL LF:	100

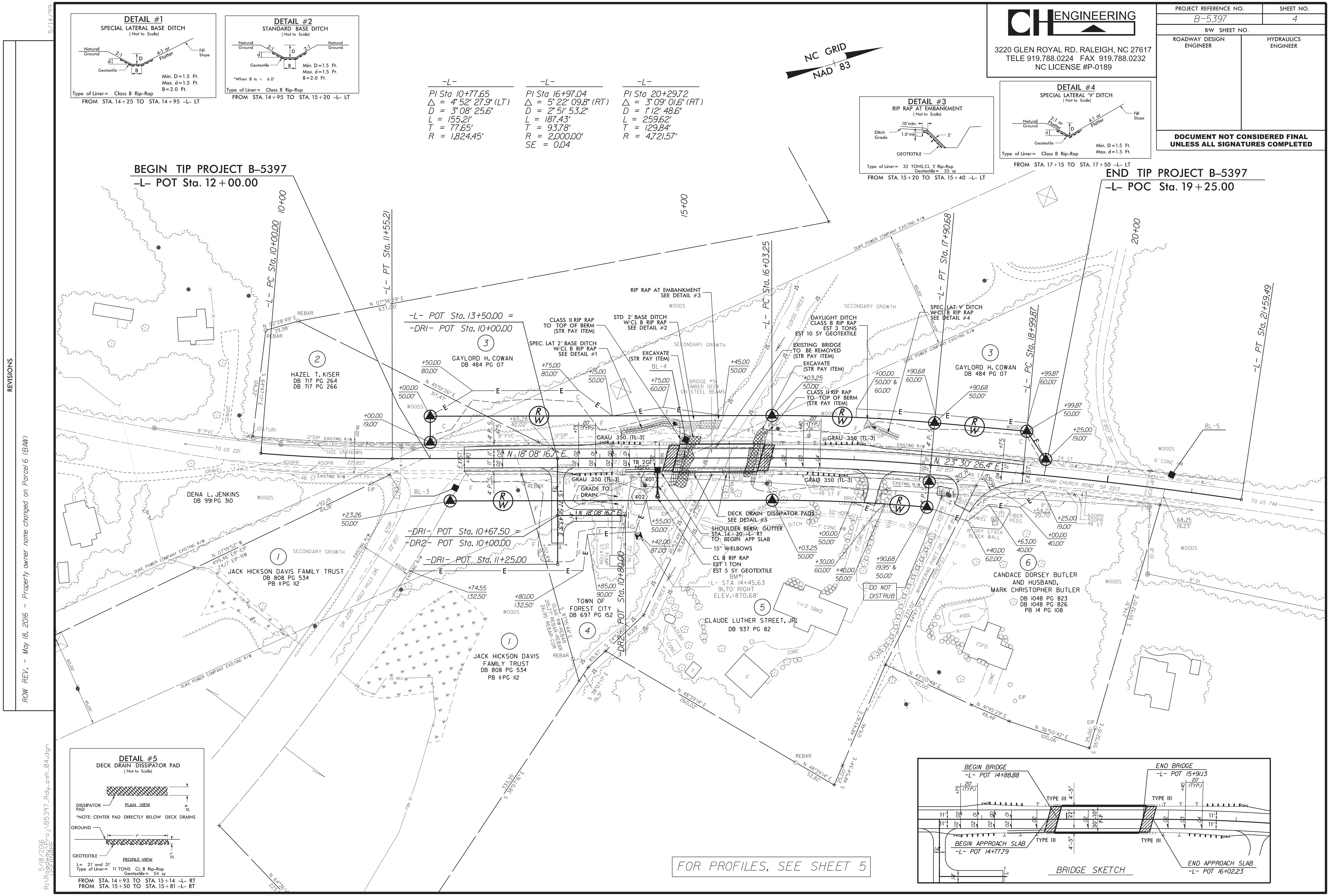
*UD = Underdrain
*BD = Blind Drain
*SD = Subsurface Drain

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU		50	100	50		
			TOTAL CY/TONS/SY:		50	100	50*	0	0

ASU = Aggregate Subgrade, AST = Aggregate Stabilization

*Total square yards of Geotextile for Soil Stabilization is only the estimated quantity for ASU/AST and may only represent a portion of the geotextile quantity shown in the Item Sheets of the Proposal.


CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189
PROJECT REFERENCE NO. B-5397
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NC GRID NAD 83
DETAIL #1
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Min. D=1.5 Ft.
Max. d=1.5 Ft.
B=2.0 Ft.
Type of Liner= Class B Rip-Rap
FROM STA. 14+25 TO STA. 14+95 -L- LT
DETAIL #2
STANDARD BASE DITCH
(Not to Scale)
Min. D=1.5 Ft.
Max. d=1.5 Ft.
B=2.0 Ft.
Type of Liner= Class B Rip-Rap
FROM STA. 14+95 TO STA. 15+20 -L- LT
DETAIL #3
RIP RAP AT EMBANKMENT
(Not to Scale)
Type of Liner= 32 TONS,CL 'I' Rip-Rap
Geotextile= 35 sy
FROM STA. 15+20 TO STA. 15+40 -L- LT
DETAIL #4
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Min. D=1.5 Ft.
Max. d=1.5 Ft.
Type of Liner= Class B Rip-Rap
FROM STA. 17+15 TO STA. 17+50 -L- LT
-L-
PI Sta 10+77.65
Δ = 4° 52' 27.9" (LT)
D = 3° 08' 25.6"
L = 155.21'
T = 77.65'
R = 1,824.45'
-L-
PI Sta 16+97.04
Δ = 5° 22' 09.8" (RT)
D = 2° 51' 53.2"
L = 187.43'
T = 93.78'
R = 2,000.00'
SE = 0.04
-L-
PI Sta 20+29.72
Δ = 3° 09' 01.6" (RT)
D = 1° 12' 48.6"
L = 259.62'
T = 129.84'
R = 4,721.57'
BEGIN TIP PROJECT B-5397
-L- POT Sta. 12+00.00
END TIP PROJECT B-5397
-L- POC Sta. 19+25.00
-L- POT Sta. 13+50.00 =
-DRI- POT Sta. 10+00.00
-DRI- POT Sta. 10+67.50 =
-DR2- POT Sta. 10+00.00
-DRI- POT Sta. 11+25.00
HAZEL T. KISER
DB 717 PG 264
DB 717 PG 266
GAYLORD H. COWAN
DB 484 PG 07
DENA L. JENKINS
DB 991 PG 310
JACK HICKSON DAVIS FAMILY TRUST
DB 808 PG 534
PB 11 PG 112
TOWN OF FOREST CITY
DB 697 PG 152
CLAUDE LUTHER STREET, JR.
DB 937 PG 82
CANDACE DORSEY BUTLER AND HUSBAND, MARK CHRISTOPHER BUTLER
DB 1048 PG 823
DB 1048 PG 826
PB 14 PG 108
BETHANY CHURCH ROAD SR 2213
TO US 221
TO US 74A
DETAIL #5
DECK DRAIN DISSIPATOR PAD
(Not to Scale)
*NOTE: CENTER PAD DIRECTLY BELOW DECK DRAINS
L= 21' and 31'
Type of Liner= 11 TONS CL B Rip-Rap
Geotextile= 54 sy
FROM STA. 14+93 TO STA. 15+14 -L- RT
FROM STA. 15+50 TO STA. 15+81 -L- RT
FOR PROFILES, SEE SHEET 5
BEGIN BRIDGE -L- POT 14+88.88
END BRIDGE -L- POT 15+91.13
BEGIN APPROACH SLAB -L- POT 14+77.79
END APPROACH SLAB -L- POT 16+02.23
BRIDGE SKETCH
REVISIONS
ROW REV. - May 18, 2016 - Property owner name changed on Parcel 6 (BAW)
5/14/99
5/18/2016
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5/28/99

CH ENGINEERING
3220 GLEN ROYAL RD. RALEIGH, NC 27617
TELE 919.788.0224 FAX 919.788.0232
NC LICENSE #P-0189

PROJECT REFERENCE NO.	SHEET NO.
B-5397	5

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

BM 1 ELEV = 870.68'
N 578,734 E 1,137,764
-L- STA 14+45.63 91.70' RIGHT
RR SPIKE IN BASE OF 12" SWEETGUM

BEGIN GRADE
-L- STA.12+40.00
EL = 886.02'

PI = 13+75.00
EL = 879.90'
VC = 250'
K = 49
V = 35 mph

PI = 17+25.00
EL = 881.87'
VC = 240'
K = 54
V = 35 mph

END GRADE
-L- STA.19+00.00
EL = 890.64'

EXCAVATE TO APPROX. ELEV. 870.0 AT CL EST 105 CY (STR PAY ITEM)

EXISTING BRIDGE TO BE REMOVED (STR PAY ITEM)

PROPOSED GRADE

(+)0.5629%

(-)14.5333%

(+)5.0114%

(-)3.60%

(-)8.00%

(+)10.00%

BEG SPEC LAT BASE DITCH
STA 14+25.0 -L- LT
EL = 877.9

EXISTING GROUND

SPEC LAT BASE DITCH
STA 14+50.0 -L- LT
EL = 877.0

CLASS II RIP RAP 1.5:1 NORMAL 1.5:1 SKEWED (STR PAY ITEM)

MIN 3.5'

EXCAVATE TO APPROX. ELEV. 873.0 AT CL EST 50 CY (STR PAY ITEM)

CLASS II RIP RAP 1.5:1 NORMAL 1.5:1 SKEWED (STR PAY ITEM)

BEG SPEC LAT "A" DITCH
STA 17+50.0 -L- LT
EL = 882.5

END SPEC LAT "A" DITCH
STA 17+15.0 -L- LT
EL = 879.0

BEG STD BASE DITCH
STA 14+95 -L- LT
EL = 873.4

END STD BASE DITCH
STA 15+20 -L- LT
EL = 871.4

WSWE ON 3-2-15 =861.6

PROP 100 YR=870.68

PROP 25 YR=869.7

NOTE: DRAINAGE EXCAVATION (STR PAY ITEM) UNDER STRUCTURE TO BE PERFORMED PRIOR TO SUPERSTRUCTURE CONSTRUCTION.

FOR PLAN, SEE SHEET 4

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 2,100	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 869.7	FT
BASE DISCHARGE	= 2,800	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 870.68	FT
OVERTOPPING DISCHARGE	= 3,600+	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 880.5	FT
DATE OF SURVEY	= March 2, 2015	
W.S.ELEVATION AT DATE OF SURVEY	= 861.6	FT

-DR1-

-DR1- 10+00.00 = -L- 13+50.00
EL = 882.05'

E.O. PV. STA. = 10+15.00
EL = 881.75'

PI = 10+30.00
EL = 881.10'
VC = 30'
K = 3

PI = 10+55.00
EL = 877.00'
VC = 20'
K = 1

END GRADE
-DR1- STA.11+00.00
EL = 875.90'

(-)4.3587%

(-)15.4000%

(-)12.4444%

-DR2-

-DR2- 10+00.00 = -DR1- 10+67.50
EL = 876.69'

E.O. PV. = 10+10.00
EL = 876.49'

END GRADE
-DR2- STA.10+75.00
EL = 872.00'

(-)6.9145%

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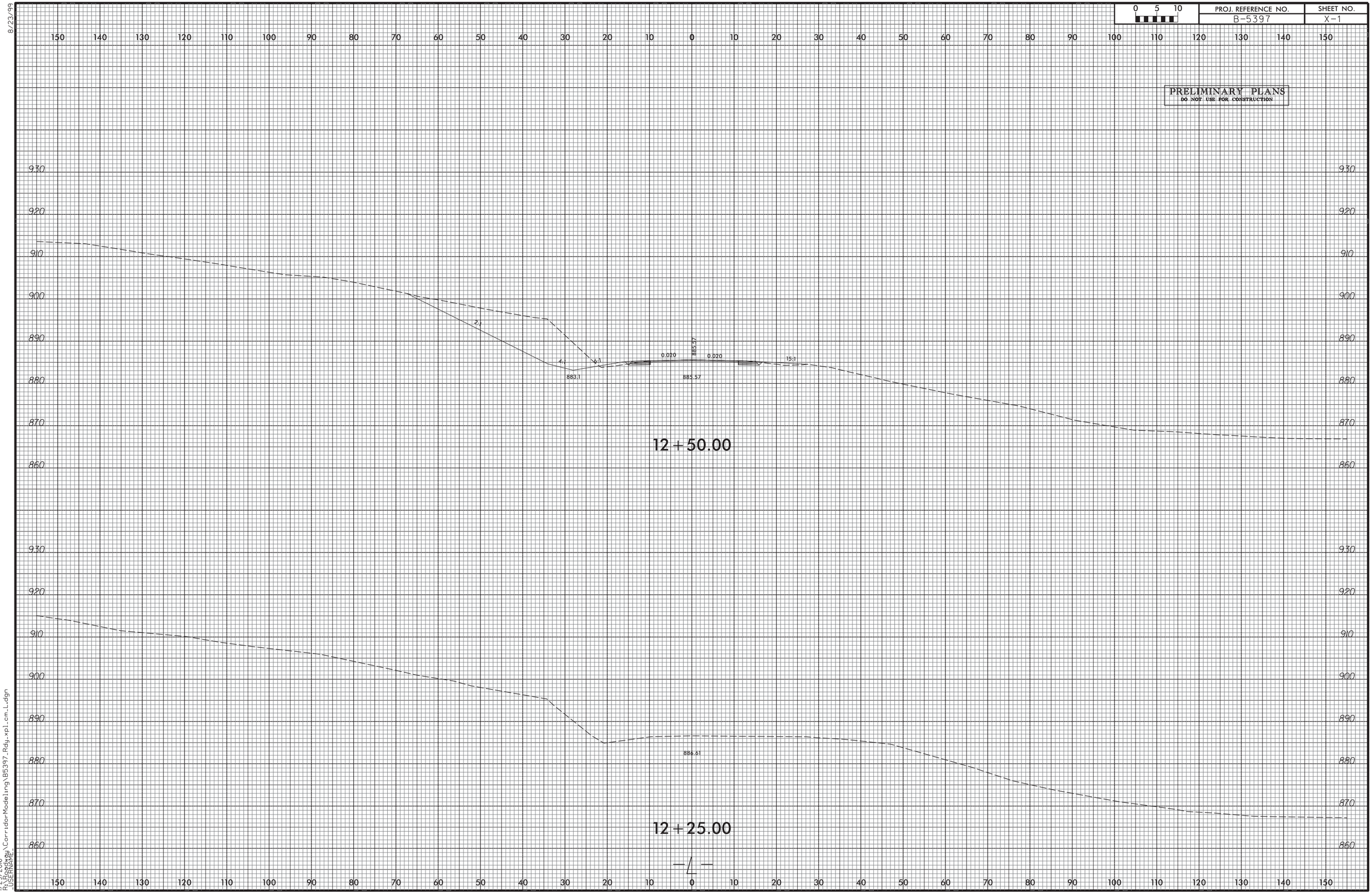
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5397	X-1

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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	B-5397	X-2

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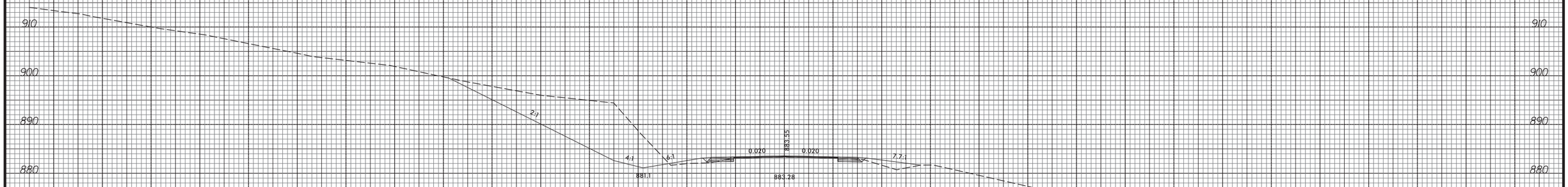
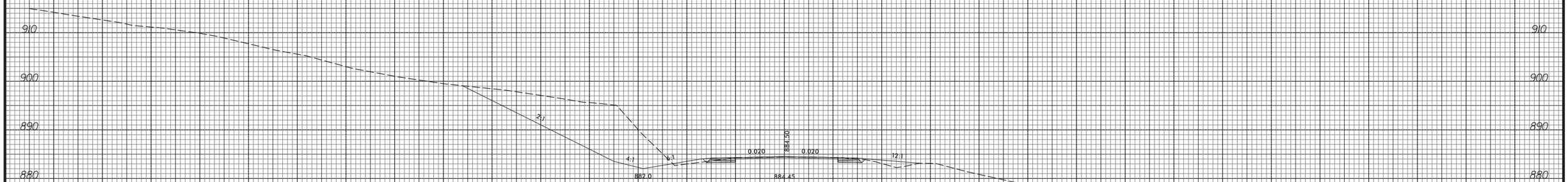
930
920
910
900
890
880
870
860



13+00.00



12+75.00

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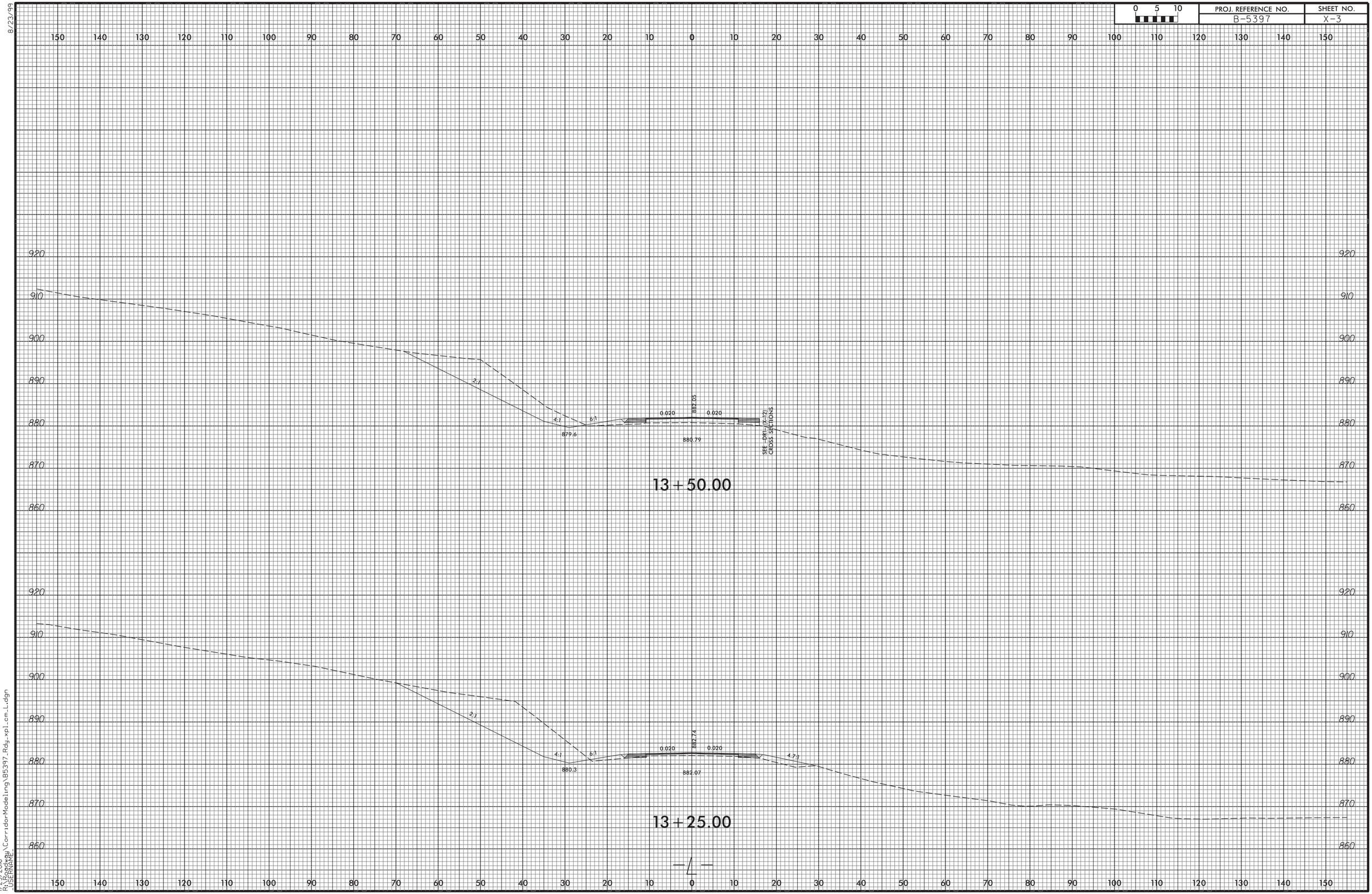

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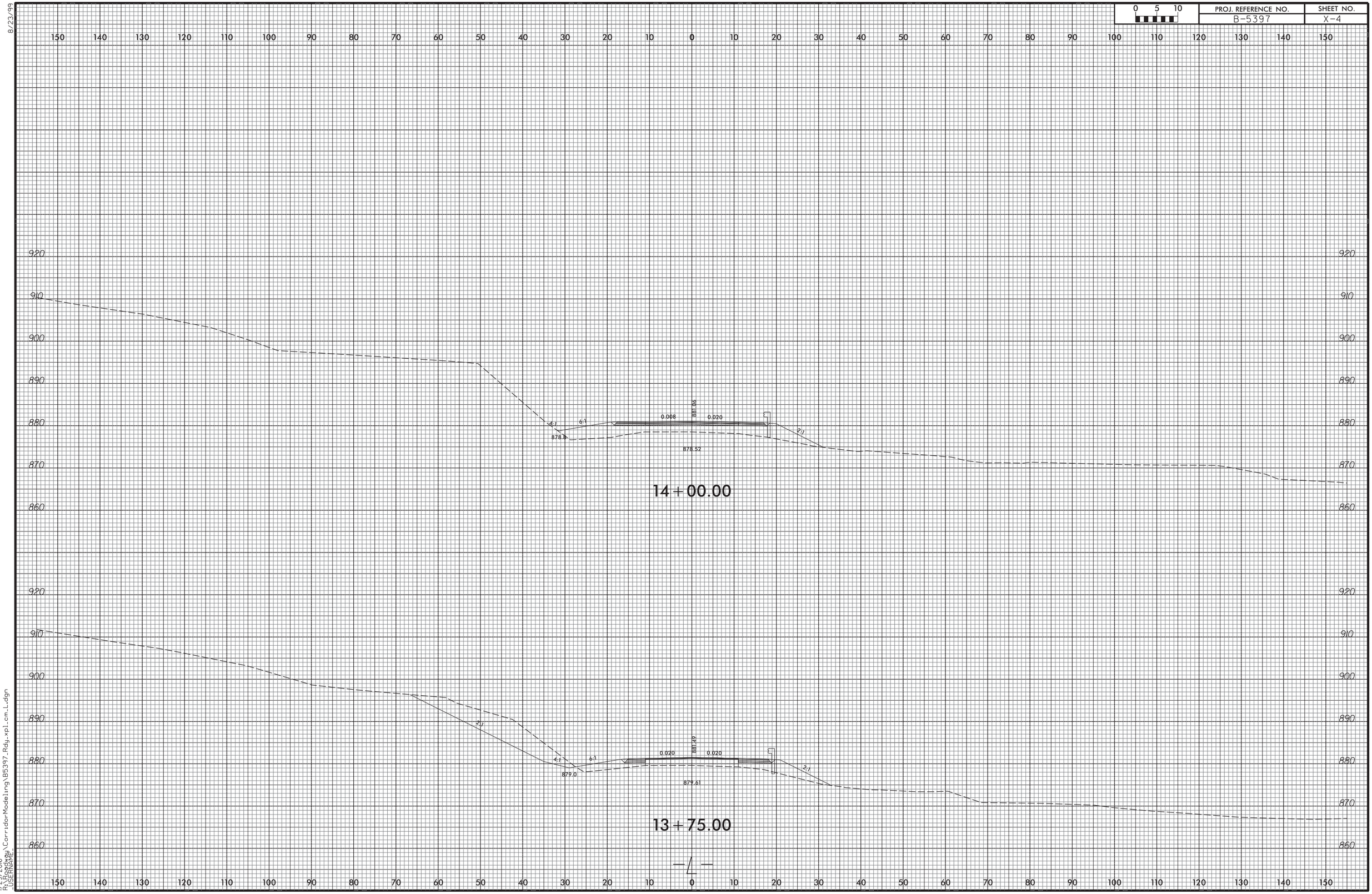

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	B-5397	X-5

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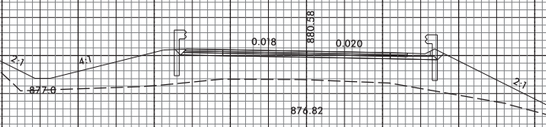
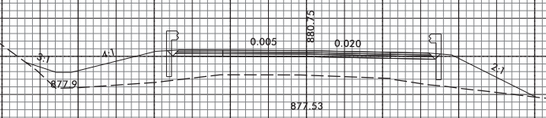
920 910 900 890 880 870 860



14+50.00

920 910 900 890 880 870 860



14+25.00

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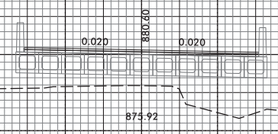
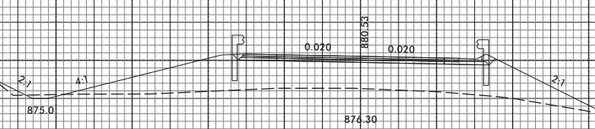
910 900 890 880 870 860



15+00.00

920 910 900 890 880 870 860



14+75.00

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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5397	X-7

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890
880
870
860

15+75.00

900
890
880
870
860

15+50.00

850
910
900
890
880
870
860

15+25.00

850

8/23/99

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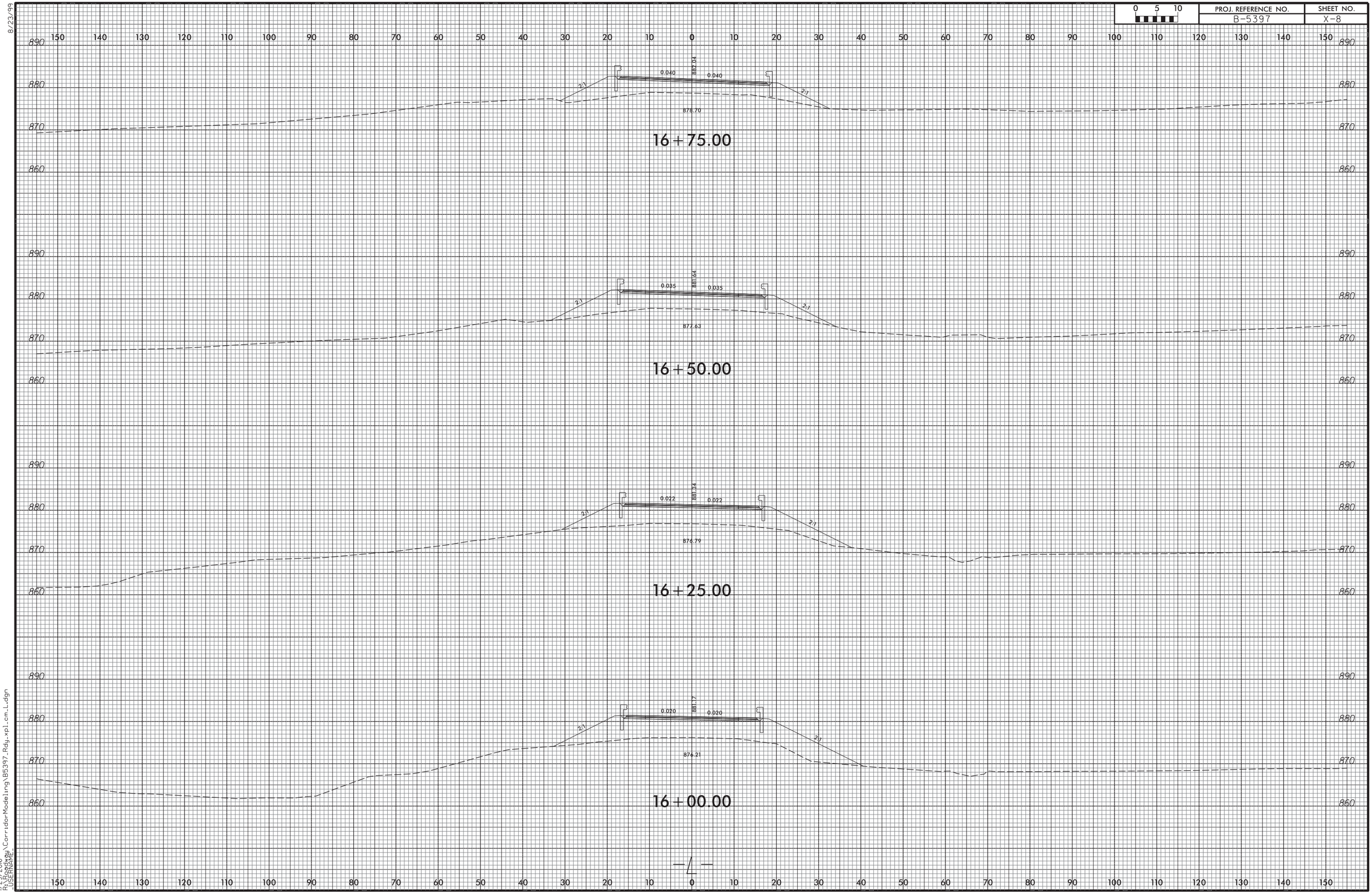
	B-5397	X-8



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	B-5397	X-9

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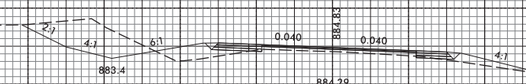
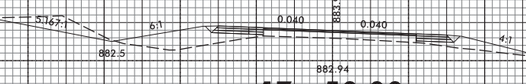
900
890
880
870



17 + 75.00



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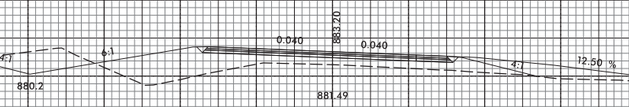

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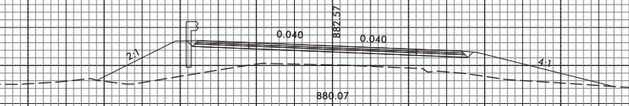

17 + 00.00

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860

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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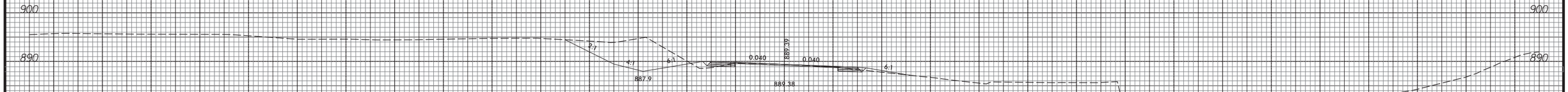
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5397	X-10

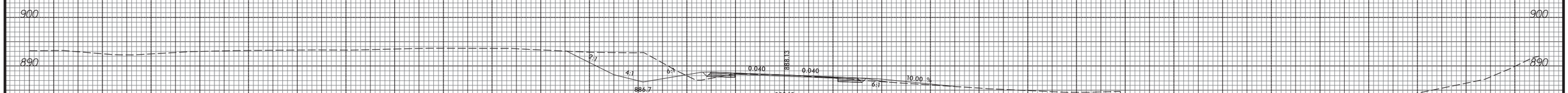
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

900 890 880



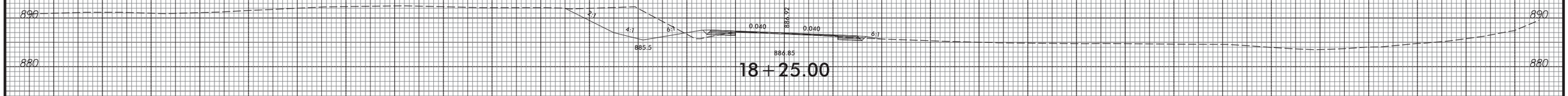
18+75.00

900 890 880



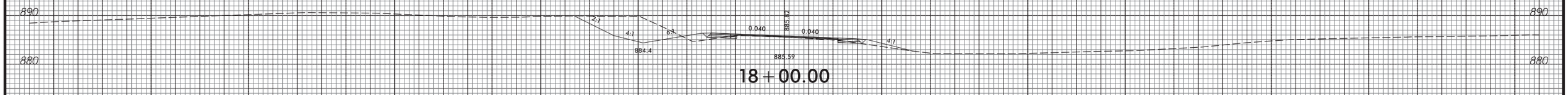
18+50.00

900 890 880



18+25.00

900 890 880



18+00.00

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150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5397	X-11

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

900
890
880

891.87

19+25.00

900
890
880

2:1
4:1
6:1
0.030
890.64
0.050
4:1
889.0
890.64

19+00.00

-4-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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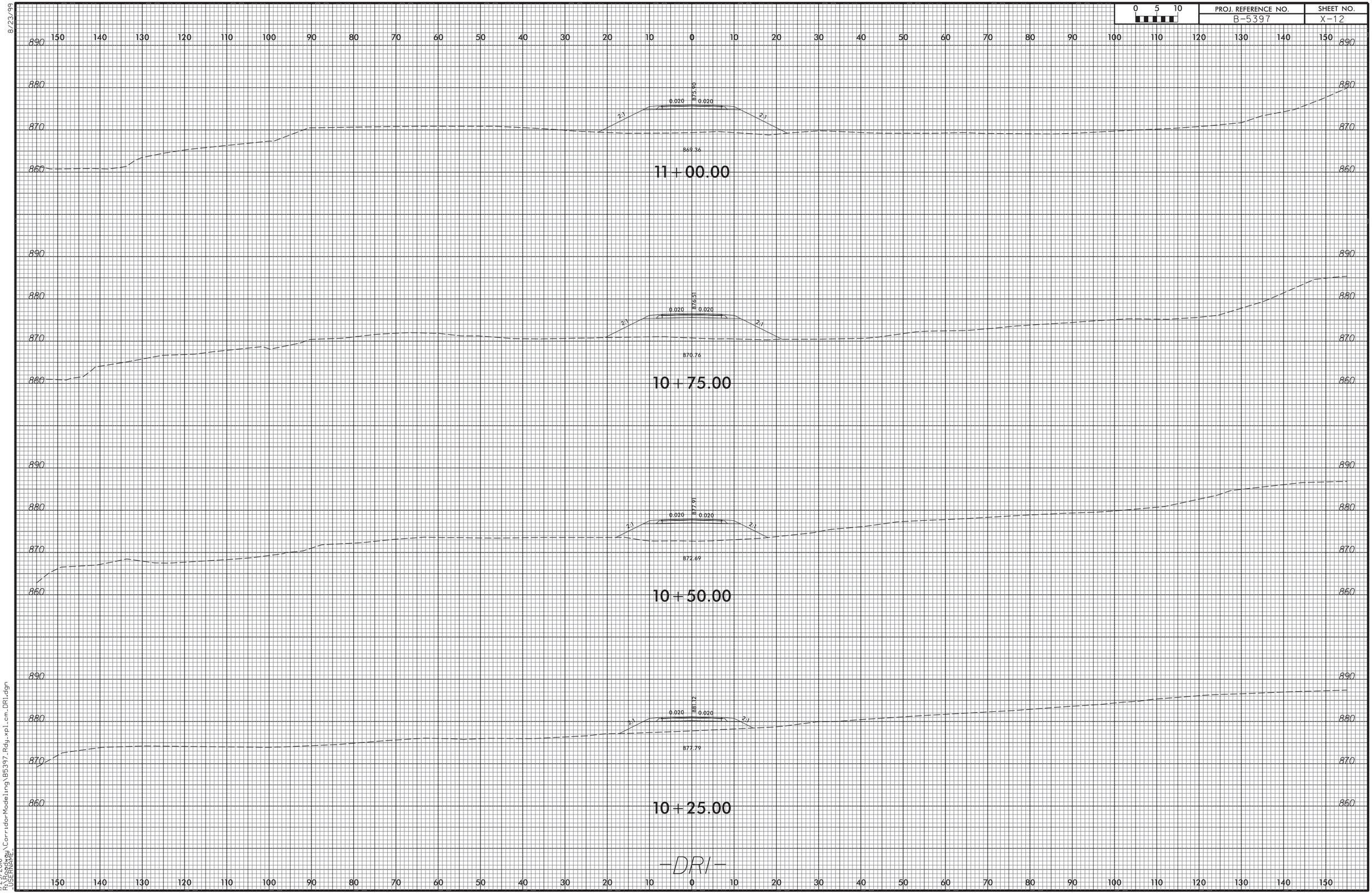
	B-5397	X-12



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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5397	X-13

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

890
880
870
860

867.98

11+25.00

-DR1-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

890
880
870
860

1/29/2016
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USERNAME

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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5397	X-14

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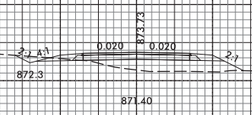
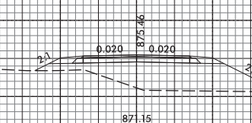
910
900
890
880
870
860
850



10+50.00



10+25.00

-DR2-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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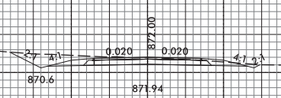
R:\Roadway\CorridorModeling\B5397_Rdy_xpl_cm_DR2.dgn
USERNAME

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-5397	X-15

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

910
900
890
880
870
860



10+75.00

-DR2-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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